

WEATHER BUREAU  
Western Region

Salt Lake City, Utah

April 1969

## Climate of Phoenix, Arizona

R. J. SCHMIDT

P. C. KANGIESER

R. S. INGRAM

**CRH LIBRARY**

NOAA LIBRARY SEATTLE

QC  
995  
.U68  
no.38



Technical Memorandum WBTM WR-38

DEPARTMENT OF COMMERCE / ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION



#### WESTERN REGION TECHNICAL MEMORANDA

The Technical Memorandum series provide an informal medium for the documentation and quick dissemination of results not appropriate, or not yet ready, for formal publication in the standard journals. The series are used to report on work in progress, to describe technical procedures and practices, or to report to a limited audience. These Technical Memoranda will report on investigations devoted primarily to Regional and local problems of interest mainly to Western Region personnel, and hence will not be widely distributed.

These Memoranda are available from the Western Region Headquarters at the following address: Weather Bureau Western Region Headquarters, Attention SSD, P. O. Box 11188, Federal Building, Salt Lake City, Utah 84111.

The Western Region subseries of ESSA Technical Memoranda, beginning with No. 24, are available also from the Clearinghouse for Federal Scientific and Technical Information, U. S. Department of Commerce, Sills Building, Port Royal Road, Springfield, Virginia 22151. Price \$3.00.

#### Western Region Technical Memoranda:

- No. 1\* Some Notes on Probability Forecasting. Edward D. Diemer. September 1965.
- No. 2 Climatological Precipitation Probabilities. Compiled by Lucianne Miller. December 1965.
- No. 3 Western Region Pre- and Post-FP-3 Program. Edward D. Diemer. March 1966.
- No. 4 Use of Meteorological Satellite Data. March 1966.
- No. 5\*\* Station Descriptions of Local Effects on Synoptic Weather Patterns. Philip Williams. April 1966.
- No. 6 Improvement of Forecast Wording and Format. C. L. Glenn. May 1966.
- No. 7 Final Report on Precipitation Probability Test Programs. Edward D. Diemer. May 1966.
- No. 8 Interpreting the RAREP. Herbert P. Benner. May 1966. (Revised Jan. 1967.)
- No. 9 A Collection of Papers Related to the 1966 NMC Primitive-Equation Model. June 1966.
- No. 10\* Sonic Boom. Loren Crow (6th Weather Wing, USAF, Pamphlet). June 1966.
- No. 11 Some Electrical Processes in the Atmosphere. J. Latham. June 1966.
- No. 12\* A Comparison of Fog Incidence at Missoula, Montana, with Surrounding Locations. Richard A. Dightman. August 1966.
- No. 13 A Collection of Technical Attachments on the 1966 NMC Primitive-Equation Model. Leonard W. Snellman. August 1966.
- No. 14 Applications of Net Radiometer Measurements to Short-Range Fog and Stratus Forecasting at Los Angeles. Frederick Thomas. September 1966.
- No. 15 The Use of the Mean as an Estimate of "Normal" Precipitation in an Arid Region. Paul C. Kangieser. November 1966.
- No. 16 Some Notes on Acclimatization in Man. Edited by Leonard W. Snellman. Nov. 1966.
- No. 17 A Digitalized Summary of Radar Echoes Within 100 Miles of Sacramento, California. J. A. Youngberg and L. B. Overaas. December 1966.
- No. 18 Limitations of Selected Meteorological Data. December 1966.
- No. 19 A Grid Method for Estimating Precipitation Amounts by Using the WSR-57 Radar. R. Granger. December 1966.
- No. 20 Transmitting Radar Echo Locations to Local Fire Control Agencies for Lightning Fire Detection. Robert R. Peterson. March 1967.
- No. 21 An Objective Aid for Forecasting the End of East Winds in the Columbia Gorge. D. John Coparanis. April 1967.
- No. 22 Derivation of Radar Horizons in Mountainous Terrain. Roger G. Pappas. April 1967.
- No. 23 "K" Chart Application to Thunderstorm Forecasts Over the Western United States. Richard E. Hambidge. May 1967.

\*Out of Print

\*\*Revised



A western Indian symbol for rain. It also symbolizes man's dependence on weather and environment in the West.

U. S. DEPARTMENT OF COMMERCE  
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION  
WEATHER BUREAU

Weather Bureau Technical Memorandum WR-38

CLIMATE OF PHOENIX, ARIZONA

R. J. Schmidli, P. C. Kangieser, and R. S. Ingram  
Weather Bureau Office  
Phoenix, Arizona

PROPERTY OF  
NOAA Library E/OCes  
7600 Sand Point Way NE  
Seattle, WA 98145-0001



WESTERN REGION  
TECHNICAL MEMORANDUM NO. 38

SALT LAKE CITY, UTAH  
APRIL 1969

## TABLE OF CONTENTS

	<u>Page</u>
Preface	v
I. General Description	
Geographical & Climatological Summary of Phoenix	1-2
II. Climatological Summary of Phoenix by Months	2-10
III. History of Weather Observations	10-12
Map of Phoenix & the Salt River Valley	13
Sunrise & Sunset at Phoenix, Arizona	14
IV. Temperature	
Normal Maximum, Minimum and Mean by Months	15
Highest & Lowest Mean by Months and Year of Occurrence	15
Normal Maximum, Minimum and Mean by Days	16
Highest Maximum & Lowest Minimum by Months and Day and Year of Occurrence	17
Mean Diurnal Variation of Dry Bulb Temperature (T), Relative Humidity (RH), Wet Bulb Temperature (WB), and Dew Point (DP) at Sky Harbor Airport, by Months	18-19
Days with 100 Degrees or Higher	20
Days with 110 Degrees or Higher	21
Greatest Number of Consecutive Days with Maximum 115 or Higher, 110 or Higher, 105 or Higher, & 100 or Higher	21
Greatest Number of Consecutive Days with Maximum 75 or Lower, 60 or Lower, 55 or Lower, 50 or Lower, 45 or Lower, and 42 or Lower	22
Greatest Number of Consecutive Days with Minimum 35 or Lower, 32 or Lower, 30 or Lower, 28 or Lower, 25 or Lower, and 20 or Lower	23
Normal and Highest and Lowest Heating Degree Days by Months and Year of Occurrence	24
Average and Highest and Lowest Cooling Degree Days by Months and Year of Occurrence	25
Freeze and Growing Season Data	26-28
V. Precipitation	
Normal Total and Maximum and Minimum Total by Months and Year of Occurrence	29
Daily Frequency of Occurrence of Trace or More in Percent	30
Greatest Number of Days with Trace or More and 0.01 Inch or More by Months and Year of Occurrence, and Average Number of Days with 0.01 Inch or More by Months	31

# TABLE OF CONTENTS (Continued)

	<u>Page</u>
Precipitation	
Greatest Number of Days with 0.10 Inch or More, 0.50 Inch or More, and 1.00 Inch or More by Months and Year of Occurrence	32
Greatest Number of Consecutive Days with Trace or More, 0.01 Inch or More, 0.25 Inch or More, 0.50 Inch or More, and 1.00 Inch or More	33
Greatest Number of Consecutive Days Without Trace or More and Without 0.01 Inch or More	33
Maximum Amounts for 5, 10, 15, and 30 Minutes; 1, 2, and 24 Hours by Months and Day and Year of Occurrence	34
Likelihood of 0.01 Inch or More on Consecutive Days in Percent by Months	35
Dates and Amounts of All Snowfalls	35
VI. Thunderstorms, Hail and Tornadoes	
Arizona Monsoon	36
Average Number of Days with Thunderstorms and Hail by Months	37
Greatest Number of Days with Thunderstorms and Hail by Months and Year of Occurrence	37
Probability of Thunderstorm Occurrence in Percent by Days	38
Description of Known Tornadoes and Funnel Clouds in the Greater Phoenix Area	39-40
VII. Sunshine, Cloudiness and Fog	
Average and Highest and Lowest Percentage of Possible Sunshine by Months and Year of Occurrence	41
Average Annual Percentage of Possible Sunshine at Phoenix as Compared to Other Major U.S. Cities	41
Average Number of Clear, Partly Cloudy, Cloudy, and Heavy Fog Days by Months	42
VIII. Wind	
Average Speed, Prevailing Direction, and Peak Gusts by Months and Day and Year of Occurrence	43
Mean Frequency of Occurrence of Peak Wind Gusts by Months	44
IX. Pressure	
Average and Highest and Lowest Station Pressure by Months and Day and Year of Occurrence	45
Highest and Lowest Sea-Level Pressure by Months and Day and Year of Occurrence	46
Normal 6-Hourly Pressure Changes in Inches	47
X. Flying Weather	
Percentage Frequencies of Ceiling Visibility	48

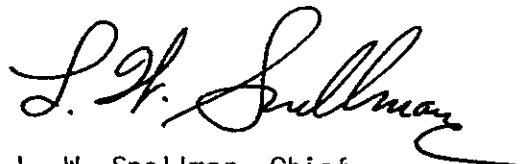
TABLE OF CONTENTS (Continued)

	<u>Page</u>
XI. Holiday Weather Information Average Maximum and Minimum Temperatures, Highest Maximum and Lowest Minimum Temperatures and Year of Occurrence, and Frequency of Trace or More of Precipitation in Percent	49
XII. Weather Extremes Weather Extremes for Phoenix as Compared to Those for Arizona and United States	50-51

## PREFACE

The population and agricultural importance of the Phoenix, Arizona, area are expected to increase significantly over the next decade. Current projections are for the population in the area to grow to over a million people in the 1970s. Currently, Maricopa County, with Phoenix as the County Seat, already ranks with the first five counties of the United States in agricultural production value.

The purpose of this publication is to provide data on the climate of Phoenix. It is hoped that these data will help residents, visitors, prospective residents, agriculturalists, engineers, community planners, Chambers of Commerce, the movie industry, etc., make more skillful decisions affecting their daily lives, their plans for the future, and hence the whole economy of the area.



L. W. Snellman, Chief  
Scientific Services Division  
Weather Bureau Western Region

## CLIMATE OF PHOENIX

### I. GENERAL DESCRIPTION

#### Geographical and Climatological Summary of Phoenix.

Phoenix is located in about the center of the Salt River Valley, a broad, oval-shaped, nearly flat plain. The Salt River runs from east to west through the valley but, owing to impounding dams upstream, it is usually dry. The climate is of a desert type with low annual rainfall and low relative humidity. Daytime temperatures are high throughout the summer months. The winters are mild. Nighttime temperatures frequently drop below freezing during the three coldest months, but afternoons are usually sunny and warm.

At an elevation of about 1100 feet, the station is in a level or gently sloping valley running east and west. The Salt River Mountains are located about 6 miles to the south and rise to 2600 feet m.s.l. The Phoenix Mountains lie 8 miles to the north-northwest and have a maximum elevation of 2300 feet m.s.l. Eighteen miles to the southwest lies the 3300-foot Estrella Mountains, and 25 miles to the west are found the White Tank Mountains with an elevation of 4000 feet m.s.l. The Superstition Mountains are approximately 40 miles to the east and rise to 4600 feet m.s.l.

The central floor of the Salt River Valley is irrigated by water from dams built on the Salt River system. To the north and west of the gravity flow irrigated district, there is considerable agricultural land irrigated by pump water. There is no evidence that the irrigation has in any way affected the relative humidity in the valley. The average daytime relative humidity is about 28 percent based on observations at 11:00 a.m. and 5:00 p.m.

There are two separate rainfall seasons. The first occurs during the winter months from November to March when the area is subjected to occasional storms from the Pacific Ocean. While this is classed as a rainfall season, there can be periods of a month or more in this or any other season when practically no precipitation occurs. Snowfall occurs very rarely in the Salt River Valley, while light snows occasionally fall in the higher mountains surrounding the valley. The second rainfall period occurs during July and August when Arizona is subjected to widespread thunderstorm activity whose moisture supply originates in the Gulf of Mexico. These thunderstorms are extremely variable in intensity and location.

The spring and fall months are generally dry, although precipitation in substantial amounts has fallen on occasion during every month of the year.

During the winter months the temperature is marginal for some types of crops, such as citrus. Areas with milder temperatures around the edges of the valley are utilized by these crops. However, the valley is subject to occasional killing and hard freezes in which no area escapes damage.

The valley floor, in general, is rather free of wind. During the spring months southwest and west winds predominate and are associated with the passage of low pressure troughs. During the thunderstorm season there are often local gusty winds, usually flowing from an easterly direction. Throughout the year there are periods, often several days in length, in which winds remain under 10 miles an hour.

Sunshine in the Phoenix area averages 86 percent of the possible amount, ranging from a minimum monthly average of 77 percent in January and December to a maximum of 94 percent in June. During the winter, skies are sometimes cloudy, but clear skies predominate and temperatures are mild. During the spring, skies are also predominately clear with warm temperatures during the day and mild pleasant evenings. Beginning with June, daytime weather is hot. During July and August, there is often considerable afternoon cloudiness associated with cumulus clouds building up over the nearby mountains. Summer thundershowers seldom occur in the valley before evening.

The autumn season, beginning during the latter part of September, is characterized by sudden changes in temperature. The change from the heat of summer to mild winter temperatures usually occurs during October. The normal temperature change from the beginning to the end of this month is the greatest of any of the twelve months in central Arizona. By November, the mild winter season is definitely established in the Salt River Valley region.

## II. CLIMATOLOGICAL SUMMARY OF PHOENIX BY MONTHS

### 1. January Weather.

The Phoenix area generally experiences its coldest weather in January; yet daytime temperatures still average in the midsixties. The normal daily maximum is 64.0°, the normal daily minimum is 35.3° and the normal mean monthly temperature is 49.7°.

The warmest January occurred in 1927 when the mean monthly temperature was 56.2°; the coldest was in 1937 with a mean temperature of only 43.2°. The highest temperature recorded in any January was 84° on the 9th in 1923 and on the 20th in 1950. The lowest January temperature (and the all-time low for Phoenix) was 16° on January 7, 1913. One of the warmest nights occurred on the 1st in 1962 when the temperature fell no lower than 58° (this same record was set earlier on the 10th in 1957). The record cold day for January and for any winter month was January 6, 1913 when the high, low and mean temperatures were 39°, 17° and 28° respectively.

The relative humidity for the month averages lower than that for December. The value at 5:00 p.m. averages 30%.

The mean hourly surface wind speed is 4.7 m.p.h. and the prevailing direction is east. The peak gust was 49 m.p.h. from the west-northwest on January 7, 1965.

Precipitation during the month normally totals 0.73 inch; but it has ranged from 3.67 inches in 1897 to none in 1948, 1924 and 1912. The greatest amount of precipitation in 24 hours was 1.76 inches which occurred on January 9-10, 1905. There are normally four days with 0.01 inch or more of precipitation, but January 1916 had 11 such days.

Snow can occur in January, but it is unusual. Snow in amounts up to 1 inch has been reported at the official observing station on six January days between 1896 and 1968. The heaviest falls of just 1 inch fell in 1933 and 1937. On January 21, 1937 amounts up to 4 inches fell in parts of the city.

The mean monthly percentage of possible sunshine during the month is 77%. The greatest amount of possible sunshine was 100% in 1924, and the least was 54% in 1935.

There are normally 14 clear days, 7 partly-cloudy days and 10 cloudy days in the month. The greatest number of clear days was 27 in 1924 and 1925, while the greatest number of cloudy days was 22 in 1957.

## 2. February Weather.

February begins the spring months as warm weather gradually returns to the Desert Southwest. High temperatures slowly rise from a normal of 65° at the beginning of the month to 72° at the end of the month, and nighttime temperatures moderate from 37° to 41°. Nevertheless, a nighttime freeze is still a threat in February and into early March. Freezing temperatures can be expected on 4 nights during February.

Temperatures in the 90s can occur in February, but such occurrences are unusual. The highest ever recorded was 92° on the 25th in 1921. It has dropped as low as 24° on the 7th in 1899 and on the 8th in 1933. The coldest February on record was in 1939 with a mean temperature of 47.0° and the warmest was a 61.4° in 1957.

Surprisingly enough, February ranks with December as the second wettest month of the year. The normal rainfall for the month is 0.85 inch, and usually there are four days with 0.01 inch or more of rain. The month can be counted on to have at least one day with a thunderstorm, but in 1931 there were five days with thunderstorms. As much as 4.64 inches of rain have been measured in a February back in 1905 and none fell in 1912 and 1967. There was almost an inch of snow on February 2, 1939 and a trace of snow was observed in 1918 and on other days in 1939.

There are usually 13 clear days, 6 partly cloudy days and 9 cloudy days with an expectancy of 80% sunshine during the month.

The month is not one of the windier months, but in 1959 a peak gust of 49 m.p.h. was measured.

### 3. March Weather.

In March temperatures begin to warm noticeably. The average daily high temperature rises from 72° to 79° during the month and temperatures above 85° are not uncommon in the last days. At the same time, average daily low temperatures rise from 41° to 46°. However, it should be remembered that even by the end of the month there is still a 20% chance of a 32° temperature in the colder sections of the valley. The average temperature for the month is 59°.

The warmest March on record occurred in 1934 when the average temperature was 70.0°, and the coldest occurred in 1897 with 54.3°. The highest temperature ever recorded on a March day was 95° on the 16th in 1921 and on the 30th in 1934. The lowest temperature was 25° on the 4th in 1966. Some March days can still be cold, and a high temperature of only 49° was observed on the 2nd in 1915. At the other extreme, there was one day, the 20th in 1939, when the temperature did not fall below 65°. This is warm even for early summer!

Rainfall drops off somewhat from the winter peak and averages 0.66 inch. As much as 4.16 inches was measured in 1941, and none was recorded in 1933, 1956 and 1959. Three days with measurable rain can be expected during the month, and about every other year two consecutive days of measurable rain can be expected.

Snow has been observed only once since 1896. Two-tenths of an inch fell on the 12th in 1917.

The month averages about nine cloudy days and has had as many as fifteen in 1966. There was only one cloudy day in 1917. Although not especially a sunny month, March still averages about 83% sunshine. In 1959 there was 98% sunshine, and in 1905 there was as little as 61%.

### 4. April Weather.

Elsewhere in the nation, April is greeted generally as the first month of spring:

"April and May are the keys of the year."

"April showers bring May flowers", etc.

But in Phoenix, spring has been underway for some time before April makes its appearance. The average high temperature rises from 79° at the beginning of the month to 89° by the end. 100° temperatures are unusual. In 1925 a 103° temperature was recorded on the 14th. The average number of days of such temperatures during this month, however, is less than one. Many years have none at all, but there were three days with 100° or higher in 1962. Nighttime temperatures rise from an average of 46° on the 1st to 54° on the 30th.

The mean temperature for the month is 67.2°, and it has been as warm as 74.8° in 1934 and as cold as 61.6° in 1941. Chances are that there will be eight days that are 5° warmer and ten days colder than normal during the month. There were twenty days warmer than normal in 1934 and twenty-two days that were 5° colder than normal in 1912.

April's rainfall continues the downward trend toward the June minimum, and the normal is only 0.32 inch. In 1926, 3.36 inches fell and the last April without any rain at all was in 1962. Over the years, however, the month averages two days with measurable rain. The most measurable rain days occurred in 1926 with 13.

Winds become a bit more gusty in April with the increase in heating, and days with gusts in the order of 20 to 24 m.p.h. or higher can be expected on fifteen days and even gusts 40 to 44 m.p.h. on one day.

April's sunshine averages 88% of possible, reaching a high value of 98% in 1961 and 1954, and a low of 68% in 1926.

Six cloudy days can be expected, but there were as many as twelve cloudy days in 1959. The last April with no cloudy days occurred in 1920.

#### 5. May Weather.

James Russell Lowell said in "Under the Willows":

"May is a pious fraud of the almanac."

And in Phoenix this is only too true! In most sections of the nation, May brings true spring weather; but in the Desert Southwest it signals the beginning of summer.

The average date of the first 100° temperature is May 17. Such a temperature reading has been observed only once as late as June 18 in 1913. And 100° temperatures are not spring-like!

The average high temperature is 93° and the average low temperature is 57°. The temperature has reached as high as 114° on the 30th in 1910 and has dipped as low as 39° on the 3rd in 1899. Fortunately, these are rare exceptions.

May signals the beginning of the dry season. The month averages only 0.13 inch of rain and is the second driest month of the year. The most rain ever recorded in May was 1.31 inches in 1930. The month only averages one day with 0.01 inch or more of rain, and it has had as many as three such days--but no more. This happened last in 1957. In contrast, there were fourteen rainy days in February 1905.

Thunderstorms occur on the average of once a month, but a few can be seen in the distance on about three other days in the month.

Cloudy days are unusual and occur on only about four days. Sunshine reaches the 93% level. Never has any May had less than 82% of possible sunshine.

At the same time, May humidities are generally extremely low in comparison with the months that follow. Perhaps May should be appreciated more than it is because it is Nature's way of conditioning residents for the steamy summer season of higher temperatures and humidities.

#### 6. June Weather.

June is the driest and one of the three warmest months of the year. The normal rainfall amounts to only 0.09 inch, but as much as 0.95 inch was measured as recently as 1955. There is usually only one day when 0.01 inch of rain falls, and the greatest number of such days was only four. The last year there were this many rainy days was in 1932.

The mean temperature of the month is 83.6° and has ranged from 90.3° in both 1959 and 1936 down to 79.0° in 1965. In early June the average daily high temperature reaches 100° or higher and stays there until mid-September. Average nighttime temperatures rise from 61° on the 1st to 71° on the 30th. However, there were two nights--the 15th in 1936 and the 24th in 1961--when the temperature didn't fall below 88°.

Despite the increasing heat, the relative humidity is the lowest of the year with a mean of 23% varying from 38% early in the morning to 14% in late afternoon. Sunshine is at its maximum and averages 94%. June 1916, 1917, 1928 and 1939 had 100% sunshine, but there was only 78% in 1931. There are usually only two cloudy days, and the most that has ever been observed was six days in 1956.

Toward the end of June, more thunderstorms become visible in the distance along the mountains heralding the arrival of the annual Arizona monsoon, that hot, humid period of midsummer.

#### 7. July Weather.

July is the month in which the Arizona monsoon usually arrives from subtropical latitudes. This monsoon features an inflow of a deep blanket of moisture along with the usual summer high temperatures. The average date of onset is July 8. This onset is determined by the date when the dew point temperature reaches 55°, the dew point being an excellent indicator of moisture.

The monsoon season is considered to be from July 8 through mid-September; however, it began as early as June 16 in 1925 and as late

as July 24 in 1943. The monsoon is not necessarily a permanent feature but may come and go, giving residents brief respites from the muggy weather. On the average there are about twenty monsoon days in July, but there were as many as twenty-eight days in 1954 and as few as eight days in 1943.

Increased thunderstorm activity accompanies the arrival of the monsoon. Thunderstorms are visible on the average during twenty-five days of the month. On seven of these days, the storms are close enough for thunder to be heard at Sky Harbor Airport, and dust storms associated with these thunderstorms are not uncommon.

With the increase in thunderstorm activity comes an increase in rainfall. The average for the month is only 0.77 inch, but 6.47 inches fell in 1911. The month averages four days with 0.01 inch or more rain but has had as many as thirteen days in 1896. The probability of a trace or more of rain on any particular day rises from 18% on the first to a peak of 47% during the last ten days as the monsoon influence intensifies. July is the windiest month of the year.

July's average temperature of 89.8° is the highest of the year, and the month features an average high temperature of 104.6° and an average low of 75.0°. The temperature has reached as high as 118° on July 11, 1958, and July 16, 1925. The lowest ever recorded was 63° on the 14th and 15th in 1912. There are usually twenty-five days with 100° or higher and three days with 110° or higher during the month. Nighttime temperatures generally fall below 80°. However, it didn't fall below 91° on the 15th in 1936 or below 90° on the 27th in 1934.

#### 8. August Weather.

By August the summer heat begins to moderate slightly, but humidities are apt to be higher than in July. This makes many residents feel that it is much hotter than it is. Actually, the average high temperature is 101.6°, three degrees cooler than in July.

August still averages 22 days with temperatures of 100° or higher. It has had as many as 31 days with these high temperatures in 1962 and in several other years, and there were as few as 9 such days in 1955. The month averages one day with temperatures of 110° or higher, but in 1962 there were seven consecutive days of 110° or higher—from the 10th through the 16th.

Rainfall in August averages 1.12 inches, the highest of any month in the year. There never has been an August on record with less than 0.01 inch. July is the only other month that always has some rain.

Thunderstorms and "dusters" are most frequent in August with an average occurrence of eight days, and thunderstorm clouds are usually visible on 24 days of the month.

Sunshine averages 85% during the month, but there are usually four cloudy days. In 1957 there were ten such cloudy days, and in 1953 and several other years there were none.

#### 9. September Weather.

September usually signals the end of the monsoon season. Although the long sustained periods of high humidity that occur principally in July and August may have ended, periods of high humidity do still occur in September. Twelve days in the month can usually be classified as monsoon days.

The average high and low temperatures are over six degrees below that of July. On the 1st the average high is 101° and the low 71°; by the 30th the average high is down to 93° and the low to 62°. 110° readings are uncommon; but there were four such 110° or higher readings in 1945 and a reading of 116° was observed on the 1st in 1950. The hot weather is not completely over as there usually are on the average 12 days of 100° or higher temperatures during the month. The average date of the last 100° temperature is the 26th. The lowest temperature ever recorded was a 47° on the 20th and 21st in 1965 and on the 22nd in 1895.

Rainfall averages 0.73 inch. The most ever recorded was 4.23 inches in 1939, and the least was none in 1953, 1957 and 1968. The month averages three days with 0.01 inch or more, but in 1939 there were nine such days.

There are usually three days with thunderstorms and nine other days when thunderstorms are visible around the surrounding mountains.

Rainfall patterns change in September from the evening thundershower pattern of the monsoon season to a more generally distributed pattern more typical of the winter months.

There are usually three cloudy days which, next to June's two days, makes it one of the least cloudy months of the year. Sunshine averages 89% of possible.

#### 10. October Weather.

October marks the beginning of the winter season. During the month weather is generated more from storm activity over the Pacific Ocean than from the subtropical moisture. High pressure systems that bring Indian Summer to eastern sections of the nation pass across the Great Basin area to the north, and dry cold fronts often pass southward across the area, drying out and cooling the air.

The average temperature for the month is 70.7°--about twenty degrees colder than July. Daytime high temperatures usually begin the month at 93° but cool off to 80° by Halloween. Nighttime low temperatures drop from 62° to 47°. These are the largest changes in normal high and low temperatures that occur during any month of the year. Record temperature extremes for the month range from 105° in 1917 to 36° in 1900. October does average one day each year with at least 100° or higher, and the latest date for such a temperature was on the 20th in 1921.

Rain amounts to only 0.46 inch on the average. Rainfall falls more evenly during the 24 hours in contrast to the summer months when it is concentrated during the night. The most rain that ever fell since records began is 2.66 inches in 1957. There is usually one thunderstorm during the month.

The month averages four cloudy days. It averages 88% of possible sunshine and has never had less than 72%.

On the whole, October is a magnificent month with enough of the summer warmth to make outdoor living the most enjoyable of the year, and yet with enough coolness to make it invigorating.

#### 11. November Weather.

With November usually comes the first 32° or below temperatures in the valley. Although the average date of such an occurrence is December 6 at Sky Harbor Airport, it usually occurs by:

November	21	in Buckeye
	22	Tempe
	23	Litchfield Park
	24	Mesa
	25	Deer Valley.

The average temperature for the month is 58.1°. Daytime high temperatures at the beginning of the month usually are about 80° and the nighttime low is normally 47°. By the end of the month these temperatures have dropped to 69° and 39° respectively. The highest temperature was a 96° on the 1st and 2nd in 1924 and the lowest was 27° on the 23rd in 1931.

By November the area is definitely under the influence of weather systems of more northern latitudes, and rainfall averages 0.49 inch. The most rainfall ever recorded was 3.61 inches in 1905, and the last time no rain fell during the month was in 1956.

Snow has been observed once since 1896. One-tenth of an inch was measured on the 28th in 1919.

Sunshine averages 84% of possible. However, there has been as much as 98% reported in 1948 and 1956 and as little as 62% in 1965.

Unlike other sections of the nation, this month is not the melancholy time that precedes the depressing winter months, but rather it is an invigorating month of sparkling days and cool nights.

## 12. December Weather.

By December freezing temperatures in the valley are rather common, and freezing temperatures can be expected somewhere in the area on 19 days of the month.

High daytime temperatures on the first of the month are about 69° and taper off slowly to 65° by the end of the month. Nighttime temperatures drop from 39° to 36°. The highest temperature ever recorded was 87° on the 10th in 1950, and the lowest was 22° on the 31st in 1900 and on the 26th in 1911.

Total rainfall for the month rises to 0.85 inch with an average of four days with 0.01 inch or more. Pacific storm systems move a little farther southward, bringing more moisture to replenish the water supply with snows in the mountains. The most rain recorded was 3.98 inches in 1967, and the least was none in 1900, 1901, 1917 and 1958.

A trace of snow has been reported on seven December days during the period 1896 through 1968.

Sunshine now reaches its annual minimum of 77% with nine cloudy days. There was 98% of possible observed in 1958; and the least that was ever recorded was 47% in 1914.

## III. HISTORY OF WEATHER OBSERVATIONS

In the 1800s when communications in the United States were improved by the development of the railroads and telegraph, the practice of predicting weather from purely local signs and the haphazard measuring of meteorological phenomena began to decline. Scientists had noted correlations between the weather in one section of the country on a particular day and that in another section on the succeeding day. It was soon realized that a simultaneous knowledge of weather conditions all over the country could conceivably enable man to predict storms of major consequences, and that warnings from such predictions could save countless lives and protect property investments. But it was not until the late 1860s that mounting public interest in a national weather service culminated in the signing into law by President Grant on February 9, 1870, of a resolution providing for meteorological observations at all military stations within the United States.

The selection of the U.S. Army Signal Service to take such observations was dictated by the availability of communications facilities which the Signal Service had developed during the Civil War and were continuing to develop for protection against the Indians after the war. The original weather services provided by this military organization

covered only the Gulf and Atlantic Coasts and the Great Lakes. Another Act of Congress, on June 10, 1872, extended these services throughout the entire United States.

Weather observations had been taken at many Army posts in Arizona prior to these formalities by Army Post Surgeons. Observations are available from some of these locations today:

<u>Station</u>	<u>County</u>	<u>Data Began</u>
Fort Defiance	Apache	Dec. 1, 1851
Camp Crittenden	Santa Cruz	December 1856
Fort Mohave	Mohave	June 1859
Fort Grant	Graham	Dec. 1, 1860
Camp Goodwin	Graham	August 1864
Fort Whipple (Prescott)	Yavapai	January 1865
Fort McDowell	Maricopa	Sept. 1, 1866
Camp Wallen	Cochise	November 1866
Camp Date Creek	Yavapai	January 1867
Fort Bowie	Cochise	Aug. 1, 1867
Camp Willow Grove	Mohave	November 1867
Camp Reno	Gila	Feb. 1, 1868
Fort Verde (Camp Verde)	Yavapai	Feb. 1, 1868
Camp Hualpai	Yavapai	December 1869
Fort Yuma	Yuma	Jan. 1, 1870

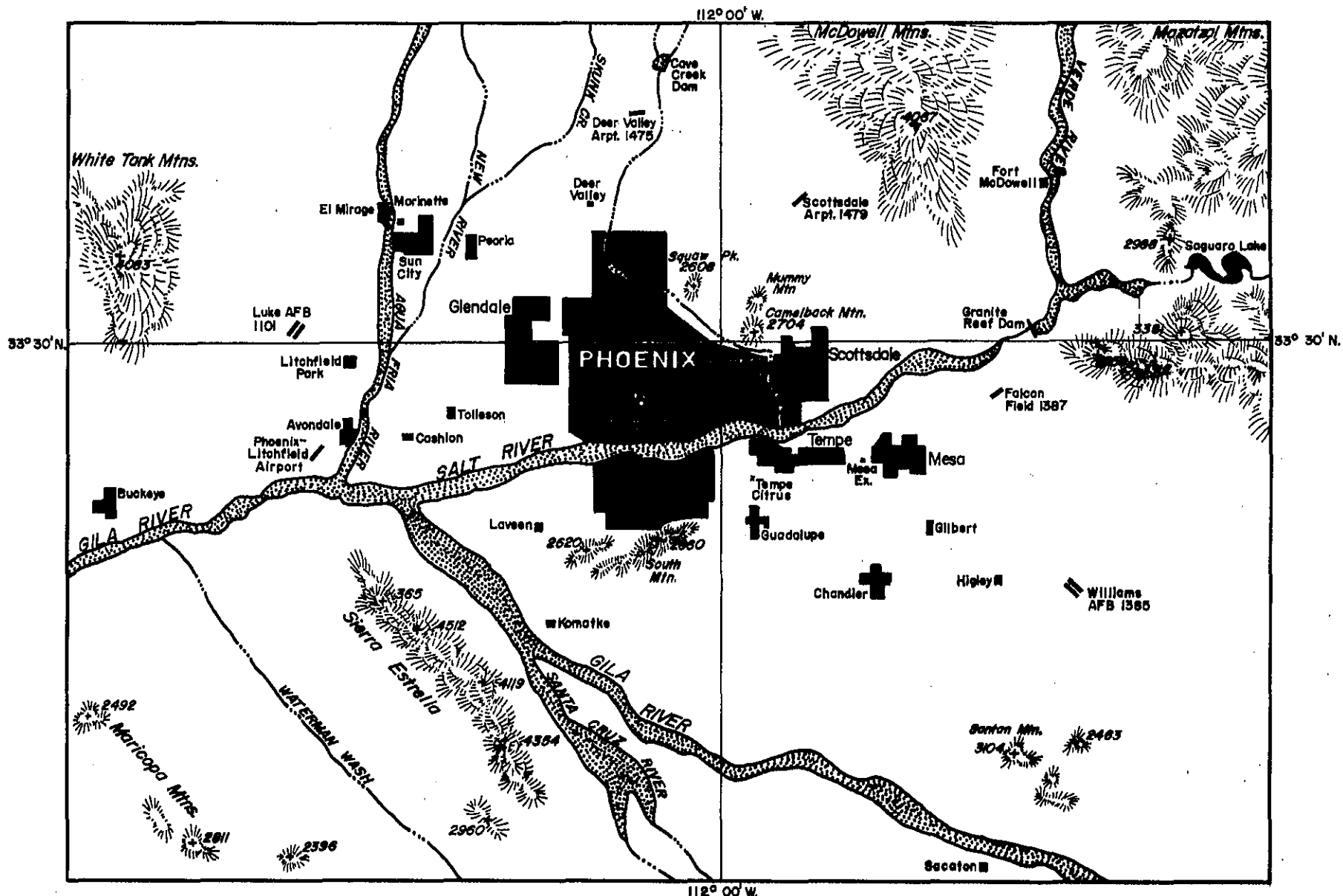
Observations from these stations were primarily temperature and rainfall; and it wasn't until 1891, when the U. S. Weather Bureau was established, that development of full reporting stations proceeded with cautious economy. The Bureau directed its attention mainly toward establishing a network of field stations. Faced with the growth of public interest, civic pride and the need to provide the best coverage for its forecasting and warning services with limited funds, the Weather Bureau could only slowly grant requests to establish weather stations in a rapidly expanding nation.

The first Weather Bureau Office to open in Arizona was in Yuma where the duties were transferred from the Army at Fort Yuma in July 1891. Tucson followed in September of that year, and it was not until four years later that the small community of Phoenix rated a full station. Records had been kept in Phoenix by the Signal Service beginning on January 28, 1876, and Signal Service personnel continued to take observations until they transferred the station at the corner of Center and Washington Streets to the Weather Bureau on August 6, 1895.

In 1901 the office was moved to the southwest corner of 1st Avenue and Adams where it remained until it moved into the Federal Building on the southwest corner of 1st Avenue and Van Buren in March 1913. Three years later in June 1916, the office moved to the Water User's Building on the southeast corner of 2nd Avenue and Van Buren. It remained there until September 1924 when it moved to the Ellis Building at 2nd Avenue and Monroe. On October 21, 1936, it moved to the Federal Building again at Central and Fillmore where it stayed until it was closed on October 22, 1953.

Meanwhile, the development of air transportation and teletype communications in the 1920s and 1930s altered and redirected somewhat the purpose of the Weather Bureau as first defined by the law in 1890. This law provided for "the distribution of meteorological information in the interest of agriculture and commerce..." as one of the Weather Bureau's major functions. "Commerce" now included the mushrooming aviation industry; and in 1940, to meet this partial change in emphasis, the Weather Bureau was transferred from the Department of Agriculture to the Department of Commerce where it remains today. In July 1965 the Weather Bureau was incorporated as an integral part of the Environmental Science Services Administration (ESSA).

In support of this new means of transportation, another Weather Bureau office was established at Sky Harbor Airport on May 2, 1933, and observations were taken there also until July 1935 when Department of Commerce radio operators took over the program. The Weather Bureau returned again to this station in January 1939 and has managed the station ever since that time.



MAP OF PHOENIX AND THE SALT RIVER VALLEY  
SCALE: 1"=8 MILES

# SUNRISE AND SUNSET AT PHOENIX, ARIZONA

## MOUNTAIN STANDARD TIME

DAY	JAN.		FEB.		MAR.		APR.		MAY		JUNE		JULY		AUG.		SEPT.		OCT.		NOV.		DEC.	
	Rise A.M.	Set P.M.	Rise A.M.	Set P.M.	Rise A.M.	Set P.M.	Rise A.M.	Set P.M.	Rise A.M.	Set P.M.	Rise A.M.	Set P.M.	Rise A.M.	Set P.M.	Rise A.M.	Set P.M.	Rise A.M.	Set P.M.	Rise A.M.	Set P.M.	Rise A.M.	Set P.M.	Rise A.M.	Set P.M.
1	7 32	5 31	7 24	5 59	6 57	6 25	6 16	6 48	5 40	7 11	5 19	7 32	5 22	7 42	5 40	7 28	6 02	6 54	6 22	6 13	6 46	5 37	7 14	5 20
2	7 32	5 32	7 24	6 00	6 56	6 25	6 15	6 49	5 39	7 11	5 19	7 33	5 22	7 42	5 41	7 27	6 02	6 53	6 23	6 12	6 47	5 36	7 15	5 20
3	7 33	5 33	7 23	6 01	6 54	6 26	6 14	6 50	5 38	7 12	5 19	7 34	5 23	7 42	5 42	7 26	6 03	6 51	6 23	6 10	6 48	5 35	7 15	5 20
4	7 33	5 34	7 22	6 02	6 53	6 27	6 12	6 50	5 37	7 13	5 19	7 34	5 23	7 42	5 42	7 25	6 04	6 50	6 24	6 09	6 49	5 34	7 16	5 20
5	7 33	5 34	7 21	6 03	6 52	6 28	6 11	6 51	5 36	7 14	5 18	7 35	5 23	7 41	5 43	7 25	6 04	6 49	6 25	6 08	6 50	5 33	7 17	5 20
6	7 33	5 35	7 21	6 04	6 51	6 29	6 10	6 52	5 35	7 14	5 18	7 35	5 24	7 41	5 44	7 24	6 05	6 47	6 26	6 06	6 51	5 32	7 18	5 20
7	7 33	5 36	7 20	6 05	6 49	6 29	6 08	6 53	5 35	7 15	5 18	7 36	5 24	7 41	5 44	7 23	6 06	6 46	6 26	6 05	6 52	5 31	7 19	5 20
8	7 33	5 37	7 19	6 06	6 48	6 30	6 07	6 53	5 34	7 16	5 18	7 36	5 25	7 41	5 45	7 22	6 06	6 45	6 27	6 04	6 53	5 31	7 19	5 20
9	7 33	5 38	7 18	6 07	6 47	6 31	6 06	6 54	5 33	7 17	5 18	7 37	5 25	7 41	5 46	7 21	6 07	6 43	6 28	6 02	6 54	5 30	7 20	5 20
10	7 33	5 39	7 17	6 08	6 46	6 32	6 05	6 55	5 32	7 17	5 18	7 37	5 26	7 40	5 47	7 20	6 08	6 42	6 29	6 01	6 55	5 29	7 21	5 21
11	7 33	5 39	7 16	6 09	6 44	6 33	6 03	6 56	5 31	7 18	5 18	7 38	5 27	7 40	5 47	7 19	6 08	6 40	6 29	6 00	6 55	5 28	7 22	5 21
12	7 33	5 40	7 15	6 10	6 43	6 33	6 02	6 56	5 30	7 19	5 18	7 38	5 27	7 40	5 48	7 18	6 09	6 39	6 30	5 59	6 56	5 28	7 22	5 21
13	7 33	5 41	7 14	6 11	6 42	6 34	6 01	6 57	5 30	7 20	5 18	7 38	5 28	7 39	5 49	7 17	6 10	6 38	6 31	5 57	6 57	5 27	7 23	5 21
14	7 32	5 42	7 13	6 12	6 40	6 35	6 00	6 58	5 29	7 20	5 18	7 39	5 28	7 39	5 49	7 16	6 10	6 36	6 32	5 56	6 58	5 26	7 24	5 21
15	7 32	5 43	7 12	6 12	6 39	6 36	5 58	6 59	5 28	7 21	5 18	7 39	5 29	7 39	5 50	7 14	6 11	6 35	6 32	5 55	6 59	5 26	7 25	5 22
16	7 32	5 44	7 11	6 13	6 38	6 36	5 57	6 59	5 27	7 22	5 18	7 39	5 30	7 38	5 51	7 13	6 12	6 34	6 33	5 54	7 00	5 25	7 25	5 22
17	7 32	5 45	7 10	6 14	6 36	6 37	5 56	7 00	5 27	7 23	5 18	7 40	5 30	7 38	5 51	7 12	6 12	6 32	6 34	5 53	7 01	5 25	7 26	5 22
18	7 31	5 46	7 09	6 15	6 35	6 38	5 55	7 01	5 26	7 23	5 18	7 40	5 31	7 37	5 52	7 11	6 13	6 31	6 35	5 51	7 02	5 24	7 26	5 23
19	7 31	5 47	7 08	6 16	6 34	6 39	5 53	7 02	5 25	7 24	5 18	7 40	5 31	7 37	5 53	7 10	6 14	6 29	6 36	5 50	7 03	5 24	7 27	5 23
20	7 31	5 48	7 07	6 17	6 32	6 39	5 52	7 02	5 25	7 25	5 18	7 41	5 32	7 36	5 54	7 09	6 14	6 28	6 36	5 49	7 04	5 23	7 28	5 24
21	7 30	5 49	7 06	6 18	6 31	6 40	5 51	7 03	5 24	7 25	5 19	7 41	5 33	7 36	5 54	7 08	6 15	6 27	6 37	5 48	7 05	5 23	7 28	5 24
22	7 30	5 50	7 05	6 19	6 30	6 41	5 50	7 04	5 24	7 26	5 19	7 41	5 33	7 35	5 55	7 06	6 16	6 25	6 38	5 47	7 06	5 22	7 29	5 25
23	7 30	5 51	7 04	6 20	6 28	6 42	5 49	7 05	5 23	7 27	5 19	7 41	5 34	7 35	5 56	7 05	6 17	6 24	6 39	5 46	7 07	5 22	7 29	5 25
24	7 29	5 52	7 03	6 20	6 27	6 42	5 48	7 05	5 23	7 27	5 19	7 41	5 35	7 34	5 56	7 04	6 17	6 23	6 40	5 45	7 07	5 22	7 29	5 26
25	7 29	5 53	7 02	6 21	6 26	6 43	5 47	7 06	5 22	7 28	5 20	7 42	5 35	7 33	5 57	7 03	6 18	6 21	6 40	5 44	7 08	5 21	7 30	5 26
26	7 28	5 54	7 00	6 22	6 24	6 44	5 45	7 07	5 22	7 29	5 20	7 42	5 36	7 33	5 58	7 02	6 19	6 20	6 41	5 42	7 09	5 21	7 30	5 27
27	7 28	5 55	6 59	6 23	6 23	6 45	5 44	7 08	5 21	7 29	5 20	7 42	5 37	7 32	5 58	7 00	6 19	6 18	6 42	5 41	7 10	5 21	7 31	5 28
28	7 27	5 55	6 58	6 24	6 22	6 45	5 43	7 08	5 21	7 30	5 20	7 42	5 37	7 31	5 59	6 59	6 20	6 17	6 43	5 40	7 11	5 21	7 31	5 28
29	7 26	5 56	6 58	6 25	6 20	6 46	5 42	7 09	5 20	7 31	5 21	7 42	5 38	7 30	6 00	6 58	6 21	6 16	6 44	5 39	7 12	5 21	7 31	5 29
30	7 26	5 57			6 19	6 47	5 41	7 10	5 20	7 31	5 21	7 42	5 39	7 30	6 00	6 56	6 21	6 14	6 45	5 38	7 13	5 20	7 32	5 30
31	7 25	5 58			6 18	6 48			5 20	7 32			5 40	7 29	6 01	6 55			6 46	5 37			7 32	5 30

Add one hour for Daylight Saving Time if and when in use.

#### IV. TEMPERATURE

##### NORMAL MAXIMUM, MINIMUM, AND MEAN BY MONTHS

Month	Maximum	Minimum	Mean
January	64.0	35.3	49.7
February	68.1	38.9	53.5
March	75.0	42.9	59.0
April	83.9	50.4	67.2
May	92.9	57.1	75.0
June	101.6	65.5	83.6
July	104.6	75.0	89.8
August	101.6	73.4	87.5
September	98.2	67.3	82.8
October	86.7	54.6	70.7
November	73.7	42.4	58.1
December	66.1	37.0	51.6
Annual	84.7	53.3	69.0

##### HIGHEST AND LOWEST MEAN BY MONTHS AND YEAR OF OCCURRENCE 1896-1968

Month	Highest	Year	Lowest	Year
January	56.2	1927	43.2	1937
February	61.4	1957	47.0	1939
March	70.0	1934	54.3	1897
April	74.8	1934	61.6	1941
May	83.2	1934	69.0	1917
June	90.3	1936 1959	79.0	1965
July	95.2	1931	85.4	1912
August	92.7	1958	84.6	1918
September	87.0	1932	78.9	1900 1912
October	78.3	1950	66.2	1916
November	64.6	1954	53.2	1938
December	57.5	1950	46.6	1911
Annual	74.1	1934	67.8	1964

Temperature:

# NORMAL MAXIMUM, MINIMUM, AND MEAN BY DAYS

JANUARY				FEBRUARY				MARCH				APRIL				MAY				JUNE			
DAY TEMPERATURE MAX MIN AVG				TEMPERATURE MAX MIN AVG				TEMPERATURE MAX MIN AVG				TEMPERATURE MAX MIN AVG				TEMPERATURE MAX MIN AVG				TEMPERATURE MAX MIN AVG			
1	65	36	51	65	37	51		72	41	57		79	46	63		89	54	72		97	61	79	
2	64	35	50	65	37	51		72	41	57		79	46	63		89	54	72		98	61	80	
3	64	35	50	65	37	51		72	41	57		79	46	63		90	54	72		98	61	80	
4	64	35	50	66	37	52		72	41	57		80	47	64		90	55	73		99	61	80	
5	64	35	50	66	37	52		73	41	57		80	47	64		90	55	73		99	62	81	
6	64	35	50	66	37	52		73	41	57		81	47	64		91	55	73		99	62	81	
7	64	35	50	66	37	52		73	42	58		81	48	65		91	55	73		99	63	81	
8	64	35	50	66	38	52		73	42	58		81	48	65		91	55	73		99	63	81	
9	64	35	50	67	38	53		74	42	58		82	48	65		91	56	74		100	63	82	
10	64	35	50	67	38	53		74	42	58		82	49	66		92	56	74		100	63	82	
11	64	35	50	67	38	53		74	42	58		82	49	66		92	56	74		100	64	82	
12	64	35	50	67	38	53		74	42	58		83	49	66		92	56	74		101	64	83	
13	64	35	50	68	38	53		74	42	58		83	50	67		92	56	74		101	65	83	
14	64	35	50	68	39	54		74	43	59		83	50	67		92	57	75		102	65	84	
15	63	35	49	68	39	54		75	43	59		84	50	67		92	57	75		102	65	84	
16	63	35	49	68	39	54		75	43	59		84	51	68		93	57	75		102	66	84	
17	63	35	49	69	39	54		75	43	59		85	51	68		93	57	75		102	66	84	
18	64	35	50	69	40	55		75	43	59		85	51	68		93	57	75		102	67	85	
19	64	35	50	69	40	55		76	43	60		85	52	69		94	58	76		103	67	85	
20	64	35	50	69	40	55		76	43	60		86	52	69		94	58	76		103	67	85	
21	64	35	50	70	40	55		76	44	60		86	52	69		94	58	76		103	67	85	
22	64	35	50	70	40	55		76	44	60		86	53	70		94	58	76		103	68	86	
23	64	35	50	70	40	55		77	44	61		87	53	70		95	58	77		104	68	86	
24	64	35	50	70	41	56		77	44	61		87	53	70		95	59	77		104	68	86	
25	64	35	50	71	41	56		77	44	61		87	53	70		95	59	77		104	69	87	
26	64	36	50	71	41	56		77	44	61		87	54	71		95	59	77		104	69	87	
27	64	36	50	71	41	56		77	44	61		88	54	71		96	59	78		104	69	87	
28	64	36	50	72	41	57		78	45	62		88	54	71		96	60	78		105	70	88	
29	64	36	50					78	45	62		89	54	72		96	60	78		105	70	88	
30	64	36	50	FEB. 29 VALUES SAME AS FEB. 28				78	45	62		89	54	72		97	60	79		105	71	88	
31	65	37	51					79	46	63						97	61	79					

JULY				AUGUST				SEPTEMBER				OCTOBER				NOVEMBER				DECEMBER			
DAY TEMPERATURE MAX MIN AVG				TEMPERATURE MAX MIN AVG				TEMPERATURE MAX MIN AVG				TEMPERATURE MAX MIN AVG				TEMPERATURE MAX MIN AVG				TEMPERATURE MAX MIN AVG			
1	105	72	89	102	75	89		101	71	86		93	62	78		80	47	64		69	39	54	
2	105	72	89	102	75	89		101	71	86		93	61	77		79	47	63		68	39	54	
3	105	73	89	102	75	89		101	71	86		92	61	77		78	46	62		68	38	53	
4	106	73	90	102	75	89		101	70	86		92	60	76		78	46	62		68	38	53	
5	106	74	90	102	75	89		101	70	86		91	60	76		78	46	62		67	38	53	
6	106	74	90	102	75	89		101	70	86		91	60	76		77	45	61		67	38	53	
7	106	74	90	102	75	89		100	70	85		91	59	75		77	45	61		67	38	53	
8	106	74	90	102	75	89		100	69	85		90	59	75		77	45	61		67	38	53	
9	105	75	90	102	74	88		100	69	85		90	58	74		76	44	60		67	38	53	
10	105	75	90	102	74	88		100	69	85		89	58	74		76	44	60		67	37	52	
11	105	75	90	102	74	88		100	69	85		89	57	73		75	43	59		66	37	52	
12	105	75	90	102	74	88		100	68	84		88	57	73		75	43	59		66	37	52	
13	105	75	90	102	74	88		99	68	84		88	56	72		74	43	59		66	37	52	
14	105	75	90	102	74	88		99	68	84		88	55	72		74	42	58		66	37	52	
15	105	75	90	102	74	88		99	68	84		87	55	71		74	42	58		66	37	52	
16	105	75	90	102	74	88		99	67	83		87	54	71		73	42	58		66	37	52	
17	105	76	91	102	73	88		98	67	83		86	54	70		73	42	58		66	37	52	
18	105	76	91	102	73	88		98	67	83		86	53	70		73	41	57		66	37	52	
19	105	76	91	102	73	88		98	67	83		85	53	69		72	41	57		65	37	51	
20	104	76	90	101	73	87		97	66	82		85	53	69		72	41	57		65	37	51	
21	104	76	90	101	73	87		97	66	82		85	52	69		72	40	56		65	36	51	
22	104	76	90	101	72	87		97	66	82		84	52	68		71	40	56		65	36	51	
23	104	76	90	101	72	87		96	65	81		84	51	68		71	40	56		65	36	51	
24	104	76	90	101	72	87		96	65	81		83	51	67		71	40	56		65	36	51	
25	104	76	90	101	72	87		96	65	81		83	50	67		70	40	55		65	36	51	
26	104	76	90	101	72	87		95	64	80		82	50	66		70	40	55		65	36	51	
27	103	76	90	101	72	87		95	64	80		82	49	66		69	39	54		65	36	51	
28	103	76	90	101	72	87		94	63	79		81	49	65		69	39	54		65	36	51	
29	103	76	90	101	71	86		94	63	79		81	48	65		69	39	54		65	36	51	
30	103	76	90	101	71	86		93	62	78		81	48	65		69	39	54		65	36	51	
31	103	75	89	101	71	86						80	47	64						65	36	51	

Temperature:

HIGHEST MAXIMUM AND LOWEST MINIMUM BY MONTHS AND DAY AND YEAR OF OCCURRENCE  
1896-1968

Month	Highest	Day	Year	Lowest	Day	Year
January	84	9 20	1923 1950	16	7	1913
February	92	25	1921	24	7 8	1899 1933
March	95	16 30	1921 1934	25	4	1966
April	103	14	1925	35	10	1922
May	114	30	1910	39	3	1899
June	118	24	1929	49	4	1908
July	118	11 16	1958 1925	63	4 5	1912 1912
August	115	10	1933	58	20	1917
September	116	1	1950	47	20 21 22	1965 1965 1895
October	105	6	1917	36	31	1900
November	96	1 2	1924 1924	27	23	1931
December	87	10	1950	22	26 31	1911 1900
Annual	118	July 16 June 24 July 11	1925 1929 1958	16	Jan. 7	1913

# Temperature:

MEAN DIURNAL VARIATION OF DRY BULB TEMPERATURE (T), RELATIVE HUMIDITY (RH), WET BULB TEMPERATURE (WB), AND DEW POINT (DP) AT SKY HARBOR AIRPORT, PHOENIX, ARIZONA

## JANUARY

	A.M.												P.M.												Mean
HR	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
T	44	43	41	39	38	37	36	36	41	50	55	59	61	63	64	63	61	59	56	53	51	49	48	46	49.7
RH	61	63	64	65	66	66	67	67	56	49	44	39	34	31	29	29	30	34	40	46	51	55	57	59	50.1
WB	39	38	37	35	34	33	32	32	35	42	45	47	48	48	49	48	47	46	45	44	43	42	42	40	41.3
DP	32	31	31	28	28	27	26	26	29	32	34	34	33	32	32	30	30	31	32	33	34	34	34	32	31.0

## FEBRUARY

	A.M.												P.M.												Mean
HR	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
T	48	46	44	43	41	40	39	40	45	53	59	63	65	67	68	67	66	64	61	58	55	53	51	49	53.5
RH	53	55	57	58	59	60	60	58	51	43	36	32	29	27	25	25	26	28	33	38	42	45	48	51	43.3
WB	41	40	38	37	36	35	34	35	38	43	47	49	49	50	50	50	49	48	47	46	45	44	43	42	43.2
DP	31	31	30	29	28	28	26	26	28	32	32	33	32	32	31	30	30	31	32	32	33	33	32	32	30.6

## MARCH

	A.M.												P.M.												Mean
HR	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
T	51	49	47	46	45	44	43	46	52	61	66	69	71	73	74	74	73	71	68	64	61	58	56	54	59.0
RH	50	52	54	56	57	58	58	54	47	38	33	29	27	25	23	23	23	25	27	31	36	40	43	47	39.8
WB	43	42	40	40	39	38	37	39	43	49	51	52	53	54	54	54	53	52	51	49	48	47	46	45	46.6
DP	34	33	31	31	31	30	29	31	32	35	36	35	35	35	34	34	33	34	33	33	34	34	33	34	31.7

## APRIL

	A.M.												P.M.												Mean
HR	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
T	57	55	54	52	51	50	52	57	65	72	75	78	80	82	83	84	82	80	77	73	68	65	62	59	67.2
RH	38	40	43	45	46	47	44	39	33	28	25	22	20	19	18	17	18	19	20	23	26	29	32	35	30.3
WB	46	44	44	43	42	42	43	46	50	54	55	56	57	58	58	58	57	56	55	53	51	49	48	46	50.5
DP	32	32	32	31	31	31	31	33	36	37	37	36	36	35	35	35	34	34	33	33	32	32	32	32	33.4

## MAY

	A.M.												P.M.												Mean
HR	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
T	64	61	59	58	57	58	59	63	72	79	84	87	89	91	92	93	92	90	86	80	76	73	70	67	75.0
RH	28	30	33	36	37	36	32	27	23	20	18	16	15	14	13	13	13	14	15	16	19	21	23	26	22.4
WB	48	47	46	46	45	46	46	47	53	56	58	59	60	60	61	61	61	60	58	55	54	53	51	50	53.4
DP	31	30	30	30	31	30	30	29	32	35	36	35	36	35	33	36	33	34	32	30	31	31	31	31	32.1

## JUNE

	A.M.												P.M.												Mean
HR	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
T	73	71	69	67	66	66	68	72	80	88	93	95	97	99	100	101	100	98	95	89	85	82	78	75	83.6
RH	29	31	34	36	38	36	33	28	24	21	19	17	16	15	14	13	14	15	16	17	19	21	24	26	23.1
WB	55	54	54	53	52	52	53	54	58	62	64	65	65	66	66	66	66	66	64	61	60	58	57	56	59.5
DP	38	39	39	40	40	38	38	37	40	43	46	44	43	44	43	42	43	42	42	39	38	38	38	38	40.5

Temperature:

MEAN DIURNAL VARIATION OF DRY BULB TEMPERATURE (T), RELATIVE HUMIDITY (RH), WET BULB TEMPERATURE (WB), AND DEW POINT (DP) AT SKY HARBOR AIRPORT, PHOENIX, ARIZONA (CONTINUED)

J U L Y

HR	A.M.												P.M.												Mean
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
T	82	81	79	77	76	75	77	81	87	91	95	98	100	102	103	104	103	102	99	95	91	88	86	84	89.8
RH	40	42	45	48	49	49	46	42	36	32	29	27	25	23	21	21	21	22	24	26	28	32	35	38	33.4
WB	65	65	65	64	63	62	63	65	67	69	70	72	72	73	73	73	73	72	71	69	67	67	66	66	68.0
DP	55	56	56	56	55	55	55	56	57	57	58	58	58	57	56	57	56	56	56	55	53	54	55	56	56.0

A U G U S T

HR	A.M.												P.M.												Mean
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
T	79	78	77	76	75	74	76	79	85	90	94	96	98	100	101	101	100	98	95	91	88	86	83	81	87.5
RH	48	50	53	56	57	58	56	50	45	40	37	33	30	28	26	25	26	27	29	32	35	39	44	46	40.4
WB	65	65	65	65	65	64	65	66	69	71	73	73	73	73	73	73	73	72	70	69	68	68	67	66	68.8
DP	58	58	58	59	59	58	59	59	61	63	63	62	61	61	60	59	59	58	58	57	57	58	59	59	59.4

S E P T E M B E R

	A.M.												P.M.												
HR	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	Mean
T	75	73	71	69	68	67	68	72	79	85	90	94	96	97	98	98	97	95	90	85	83	81	79	77	82.8
RH	52	54	56	58	59	59	55	51	45	39	36	32	30	28	25	25	26	30	33	36	40	43	46	49	42.0
WB	63	62	61	60	59	58	58	61	65	67	70	71	71	71	71	71	71	71	69	66	66	65	65	64	65.7
DP	57	55	54	54	53	52	51	52	56	57	59	60	59	59	56	56	57	59	57	55	56	57	56	57	56.0

O C T O B E R

HR	A.M.												P.M.												Mean
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
T	63	61	59	58	57	55	55	60	66	75	80	83	85	86	87	86	84	81	77	73	70	67	65	64	70.7
RH	46	48	50	51	52	53	51	45	36	31	27	24	22	21	19	19	20	25	30	33	37	40	42	45	36.1
WB	52	51	50	49	48	47	47	49	52	57	59	60	61	61	61	60	59	59	58	56	55	54	53	53	54.6
DP	41	41	40	40	40	38	37	39	38	43	43	43	42	41	40	39	38	42	43	42	43	42	42	42	40.8

N O V E M B E R

HR	A.M.												P.M.												Mean
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
T	51	49	47	45	44	43	42	45	53	62	66	69	72	73	74	73	71	67	63	61	59	57	55	53	58.1
RH	58	59	61	61	62	63	63	62	52	44	39	35	32	30	28	28	29	32	38	44	48	52	55	57	47.2
WB	44	43	41	40	39	38	37	40	45	51	53	54	55	55	55	55	54	52	50	50	49	48	47	46	47.5
DP	37	35	34	32	32	31	30	33	36	40	41	40	40	39	39	38	37	36	37	39	39	40	39	38	36.8

D E C E M B E R

HR	A.M.												P.M.												Mean
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
T	46	44	42	40	39	38	37	38	45	54	58	61	63	65	66	65	63	61	58	55	53	51	49	47	51.6
RH	64	65	66	67	68	69	70	69	62	55	47	43	39	36	34	34	36	42	48	52	55	58	60	62	54.2
WB	41	39	38	36	35	34	34	34	40	46	48	50	50	51	51	51	50	50	48	47	46	44	43	42	43.7
DP	35	33	32	30	29	29	29	29	33	38	38	39	38	38	37	37	36	38	38	38	37	37	36	35	35.0

## Temperature:

### Days With 100 Degrees or Higher - 1896 - 1968

The following statistics about the occurrence of days with temperatures of 100 degrees or more are based on the official Phoenix record:

The average number of days per year with a maximum temperature of 100 degrees or higher is 83. These days are distributed throughout the year as follows:

April	May	June	July	August	September	October
less than 1	4	19	25	22	12	1

The least number of such days was 53 in 1912

The greatest number of such days was 110 in 1958

The longest number of consecutive days with maximum temperature of 100 degrees or higher was 61 from June 2 through August 1, 1935.

The date of the occurrence of the first 100 degree temperature in the spring and the last in the fall has always been of primary interest to the public. The two groups of data below show some pertinent statistics for the first occurrence of a temperature of 100 degrees or higher in the spring and the last occurrence in the fall.

#### SPRING

<i>EARLIEST DATE OF OCCURRENCE WAS</i>	April 14 1925
1 year in 50 will have the first occurrence as early as	April 16
1 year in 10 will have the first occurrence as early as	April 28
<i>AVERAGE DATE OF FIRST OCCURRENCE IS</i>	May 17
1 year in 10 will have the first occurrence as late as	June 6
1 year in 50 will have the first occurrence as late as	June 17
<i>LATEST DATE OF FIRST OCCURRENCE WAS</i>	June 18 1913

#### FALL

<i>EARLIEST DATE OF LAST OCCURRENCE WAS</i>	September 2 1904
1 year in 50 will have the last occurrence as early as	September 5
1 year in 10 will have the last occurrence as early as	September 13
<i>AVERAGE DATE OF LAST OCCURRENCE IS</i>	September 26
1 year in 10 will have the last occurrence as late as	October 8
1 year in 50 will have the last occurrence as late as	October 16
<i>LATEST DATE OF LAST OCCURRENCE WAS</i>	October 20 1921

Temperature:

Days With 110 Degrees or Higher - 1896-1968

Most residents of Phoenix put up with temperatures below 110 without grumbling. However, when the mercury climbs to 110 or higher, even old-timers feel the heat and begin to complain.

Average date of first occurrence	June 22
Earliest date of first occurrence	May 10 1934
Latest date of last occurrence	September 5 1945
1 year in 10 will have the first occurrence by	June 3
1 year in 25 will have the first occurrence by	May 26
1 year in 50 will have the first occurrence by	May 20

Average number of days with 110 or higher in one year	7
Greatest number of days with 110 or higher in one year	27 in 1936
Least number of days with 110 or higher in one year	0 in 1911

Greatest Number of Consecutive Days with Maximum 115 or Higher - 1896-1968

4 days	June	19-22	1968	115, 115, 115, 115
3 days	July	5-7	1905	115, 116, 115
3 days	July	9-11	1958	116, 115, 118

Greatest Number of Consecutive Days with Maximum 110 or Higher - 1896-1968

9 days	June	27-July	5	1907
9 days	July	3-11		1940
8 days	June	11-18		1896
8 days	July	5-12		1901
8 days	July	7-14		1958

Greatest Number of Consecutive Days with Maximum 105 or Higher - 1896-1968

28 days	June	10-July	7	1936
25 days	June	23-July	17	1958

Greatest Number of Consecutive Days with Maximum 100 or Higher - 1896-1968

61 days	June	2-August	1	1935
49 days	June	30-August	17	1966
47 days	June	11-July	27	1951

Temperature:

Greatest Number of Consecutive Days with Maximum 75 or Lower -  
1896-1968

120 days	November	16	1963-March	14	1964
107 days	November	27	1914-March	13	1915
105 days	November	11	1931-February	23	1932

Greatest Number of Consecutive Days with Maximum 60 or Lower -  
1896-1968

18 days	January	10-27	1898		
18 days	January	17-February	3	1933	
17 days	January	23-February	8	1949	

Greatest Number of Consecutive Days with Maximum 55 or Lower -  
1896-1968

9 days	January	17-25	1937		
9 days	January	23-31	1949		
8 days	January	20-27	1898		
8 days	February	2-9	1903		

Greatest Number of Consecutive Days with Maximum 50 or Lower -  
1896-1968

5 days	December	13-17	1967		
5 days	January	20-24	1937		
4 days	January	11-14	1898		
4 days	January	24-27	1949		

Greatest Number of Consecutive Days with Maximum 45 or Lower -  
1896-1968

3 days	January	5-7	1913		
3 days	January	21-23	1937		

Greatest Number of Consecutive Days with Maximum 42 or Lower -  
1896-1968

3 days	January	5-7	1913	42, 39, 41	
--------	---------	-----	------	------------	--

LOWEST MAXIMA

36	December	10	1898
39	January	6	1913
39	January	21	1937

Temperature:

Greatest Number of Consecutive Days with Minimum 35 or Lower -  
1896-1968

20 days December 7-26 1916  
17 days December 25 1966-January 10 1967

Greatest Number of Consecutive Days with Minimum 32 or Lower -  
1896-1968

14 days December 8-21 1916  
12 days December 27 1966-January 7 1967  
11 days January 21-31 1904  
11 days January 18-28 1937

Greatest Number of Consecutive Days with Minimum 30 or Lower -  
1896-1968

12 days December 27 1966-January 7 1967  
8 days January 21-28 1937

Greatest Number of Consecutive Days with Minimum 28 or Lower -  
1896-1968

5 days December 30 1911-January 3 1912  
5 days January 22-26 1937  
5 days January 12-16 1963  
4 days January 9-12 1964

Greatest Number of Consecutive Days with Minimum 25 or Lower -  
1896-1968

4 days January 9-12 1964  
3 days January 6-8 1913

Greatest Number of Consecutive Days with Minimum 20 or Lower -  
1896-1968

3 days January 6-8 1913 17, 16, 19

HIGHEST MINIMA

91 July 15 1936  
90 July 27 1934

Temperature:

NORMAL AND HIGHEST AND LOWEST HEATING DEGREE DAYS BY MONTHS  
AND YEAR OF OCCURRENCE (base 65 degrees)  
1904-1968

Month	Normal	Highest	Year	Lowest	Year
July	0	0	all	0	all
August	0	0	all	0	all
September	0	4	1965	0	most
October	22	88	1908	0	several
November	234	357	1938	39	1954
December	415	573	1911	226	1950
January	474	681	1937	271	1956
February	328	503	1939	114	1954
March	217	295	1952	6	1934
April	75	136	1941	0	1931 1959
May	0	55	1915	0	many
June	0	0	all	0	all
Season	1765	2062	1916-1917	877	1933-1934

A "heating degree day" is equal to 65°F. minus the average temperature for the day with negative differences being counted as zero. The degree degree day is used by utility companies to determine heating requirements. It is also used to help plan insulation protection and to determine the size of heating plants needed. Industry has found that a temperature of 72°F. is too high a base for these computations since in every house there is a certain amount of heat generated by appliances, electric lights, human bodies, etc. The accumulation of "heating degree days" begins on July 1.

Temperature:

AVERAGE AND HIGHEST AND LOWEST COOLING DEGREE DAYS BY MONTHS AND YEAR  
OF OCCURRENCE (base 80 degrees)  
1951-1968

Month	Average	Highest	Year	Lowest	Year
January	0	0	all	0	all
February	0	0	all	0	all
March	0	0	all	0	all
April	0	1	1953 1959	0	all others
May	35	119	1958	3	1957
June	188	316	1959	41	1965
July	355	441	1959	222	1955
August	284	400	1958	183	1956
September	146	222	1952	65	1961 1964
October	10	34	1952	0	1959 1962 1966 1968
November	0	0	all	0	all
December	0	0	all	0	all
Annual	1018	1477	1958	737	1964

A "cooling degree day" is equal to the average temperature for the day minus 80°F. with negative differences being counted at zero. The cooling degree day is used by utility companies to determine cooling requirements. It is also used to help determine the size of refrigeration plants needed. The accumulation of "cooling degree days" begins January 1.

Temperature:

Freeze and Growing Season Data

MEAN DATES OF FIRST 32° IN FALL AND LAST 32° IN SPRING

Station	First	Last
Alhambra 2NE	November 23	March 10
Buckeye	November 21	March 6
Camelback	November 23	March 8
Deer Valley	November 25	March 7
Falcon Field-Mesa	November 23	April 3
Laveen	November 27	February 21
Litchfield Park	November 23	February 26
Marinette	November 23	February 25
Mesa Experiment Station	November 24	March 3
Phoenix Post Office	December 16	January 28
Phoenix Sky Harbor	December 6	February 14
Tempe	November 22	March 2
Tempe Citrus Station	November 22	March 14

PROBABILITY OF LOW TEMPERATURES

Station	Temp °F.	S P R I N G				
		90%	75%	50%	25%	10%
Litchfield Park	40	Mar.22	Mar.30	Apr.8	Apr.17	Apr.25
	36	Mar.3	Mar.13	Mar.25	Apr.6	Apr.16
	32	Feb.1	Feb.13	Feb.26	Mar.11	Mar.23
	28	Dec.29	Jan.14	Feb.3	Feb.23	Mar.12
	24	--	--	--	Jan.25	Feb.12
	20	--	--	--	--	--
	16	--	--	--	--	--
F A L L						
		10%	25%	50%	75%	90%
40	Oct.21	Oct.27	Nov.3	Nov.10	Nov.16	
36	Oct.29	Nov.6	Nov.15	Nov.24	Dec.2	
32	Nov.4	Nov.13	Nov.23	Dec.3	Dec.12	
28	Nov.16	Nov.28	Dec.11	Dec.24	Jan.5	
24	Dec.20	Jan.4	--	--	--	
20	--	--	--	--	--	
16	--	--	--	--	--	

# Temperature:

In these probability of low temperature tables, the 50% level gives the "mean" or "average" as well as the "median" of occurrence of each threshold. Another way of expressing the same result is to state that, on the average, the first temperature as low as 40° at Litchfield Park will occur by November 3 in one half of the years (or, for example, in 5 years out of 10).

By the same line of reasoning, there is a 90% probability that the first temperatures as low as 40° will occur by November 16. Again, it can be stated that 40° will occur by November 16 in 9 years out of 10, in the long run.

## PROBABILITY OF LOW TEMPERATURES

Station	Temp °F.	S P R I N G				
		90%	75%	50%	25%	10%
Mesa Experiment Station	40	Mar.27	Apr.4	Apr.13	Apr.22	Apr.30
	36	Feb.23	Mar.7	Mar.19	Mar.31	Apr.12
	32	Jan.27	Feb.13	Mar.3	Mar.21	Apr.7
	28	--	Jan.20	Feb.8	Feb.25	Mar.13
	24	--	--	--	Jan.24	Feb.10
	20	--	--	--	--	Jan.19
	16	--	--	--	--	--
F A L L						
		10%	25%	50%	75%	90%
	40	Oct.17	Oct.25	Nov.2	Nov.10	Nov.18
	36	Oct.25	Nov.2	Nov.11	Nov.20	Nov.28
	32	Nov.2	Nov.13	Nov.24	Dec.5	Dec.16
	28	Nov.8	Nov.25	Dec.14	Jan.1	--
	24	Dec.12	Dec.26	--	--	--
	20	Jan.10	--	--	--	--
	16	--	--	--	--	--

## GROWING SEASON MEAN LENGTH (DAYS)

Temp °F.	Litchfield Park	Mesa Experiment Station
40	209	203
36	235	237
32	270	266
28	311	309
24	365	365
20	365	365
16	365	365

ARIZONA INDIAN PROVERB: *"When small water snakes leave the sand in low damp lands, frosts may be expected in three days."*

Temperature:

Freeze and Growing Season Data--"The Colder Sections of the Valley"

The climate of any urban area is continuously changing as housing developments are created from open lots and fields, as vegetation such as citrus groves are added or taken away, as streets are paved, and even, in the extreme, as the natural topography is altered.

Each home actually creates its own microclimate, absorbing heat during the day and radiating it at night. The temperature can vary 5 to 10 degrees in relatively short distances. Groups of homes, prominent geographical features such as the Papago Buttes, Camelback and Mummy Mountain, South Mountain and Squaw Peak, large buildings such as the Central Avenue groupings, broad streets and parking lots, and even a concentration of heat-producing automobile engines actually create what are known as "heat islands" that are separate, but nevertheless important, factors in the climate of the Phoenix area.

In general, however, the farther a particular location is away from these "heat islands", the more temperatures are likely to be colder than at other locations in the valley. Tolleson, on the west side of Phoenix, surrounded by agricultural land, is frequently 3 to 5 degrees colder than most locations in the city. However, there are some locations inside the city that are up to 5 degrees colder or warmer than temperatures reported at Sky Harbor Airport. These locations are unique only because of their individual relationships to the drainage of cold air and their proximity to "heat islands".

At night cold air generally flows like water toward lowest sections and often "pools" when it can go no farther or is "dammed" by a natural or unnatural obstruction. On still nights the ground loses heat more rapidly than the air itself, and a temperature inversion forms where the air close to the ground is much colder than the air a short distance above the ground. At times there may be as much as 5 to 6 degrees difference between the temperature at ground level and the 5-foot level, where standard temperatures are measured. Hence, frost may appear on the grass and low vegetation when temperatures above freezing are reported.

In summary, the temperature structure of the area is quite complex, varying from point to point in the valley, and is constantly changing with the time of the day and with the growth of the community. Most people can, with a little study, determine the relationship of their local minimum to the forecast low temperature in the colder sections of the valley.

NOTE: The lowest temperature of the day usually occurs within one hour before or after sunrise; while the highest temperature usually occurs about 2 to 3 hours before sunset.

## V. PRECIPITATION

### NORMAL TOTAL AND MAXIMUM AND MINIMUM TOTAL BY MONTHS AND YEAR OF OCCURRENCE 1896-1968

Month	Normal	Maximum	Year	Minimum	Year
January	0.73	3.67	1897	0.00	1912 1924 1948
February	0.85	4.64	1905	0.00	1912 1967
March	0.66	4.16	1941	0.00	1933 1956 1959
April	0.32	3.36	1926	0.00	1904 1920 1960 1962
May	0.13	1.31	1930	0.00	1899 1911 1913 1932 1939 1942 1945 1946 1952
June	0.09	0.95	1955	0.00	1897 1900 1901 1908 1913 1916 1917 1923 1928 1935 1939 1942 1944 1945 1946 1963 1964 1968
July	0.77	6.47	1911	trace	1947
August	1.12	5.56	1951	0.01	1900
September	0.73	4.23	1939	0.00	1953 1957 1968
October	0.46	2.66	1957	0.00	1898 1905 1909 1934 1938 1950 1952
November	0.49	3.61	1905	0.00	1897 1903 1904 1912 1916 1917 1932 1937 1938 1943 1945 1948 1956
December	0.85	3.98	1967	0.00	1900 1901 1917 1958
Annual	7.20	19.73	1905	2.82	1956

Years in which there were 5 (the most) calendar months without measurable precipitation:

1904    1945    1948.

Years in which all twelve calendar months had measurable precipitation:

1921    1925    1927    1949    1965.

Precipitation:

DAILY FREQUENCY OF OCCURRENCE OF TRACE OR MORE IN PERCENT - 1896-1968

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	14	22	21	18	10	3	18	37	27	21	11	12
2	11	23	26	14	15	5	23	45	30	19	10	15
3	19	16	30	15	10	8	18	42	22	14	7	18
4	8	21	29	16	11	10	15	40	22	16	8	16
5	11	19	25	12	8	4	21	33	22	14	10	16
6	19	30	8	15	5	8	22	29	23	11	8	16
7	15	26	11	12	5	3	25	37	19	12	15	8
8	19	23	15	18	5	4	26	32	19	10	14	16
9	16	27	18	18	10	5	22	38	16	12	14	21
10	23	19	23	7	12	11	30	38	26	7	8	23
11	22	25	18	14	12	7	29	33	22	16	7	15
12	19	22	19	14	7	5	26	36	23	12	16	23
13	26	15	18	16	4	8	30	34	21	11	14	16
14	23	12	15	11	5	5	34	33	16	14	15	19
15	15	21	15	14	7	5	42	34	8	16	16	16
16	23	21	14	11	8	4	38	42	14	10	19	21
17	21	15	14	11	14	8	38	36	15	8	16	15
18	16	11	19	11	10	8	29	36	23	12	16	14
19	26	26	15	7	8	7	33	30	12	14	8	16
20	23	19	18	5	10	7	32	23	14	7	7	18
21	21	25	21	15	7	10	47	30	7	3	14	18
22	18	15	18	19	8	8	42	38	22	8	16	15
23	19	16	22	8	8	8	42	37	15	8	18	16
24	19	15	22	8	4	8	42	36	21	12	21	12
25	23	22	22	10	5	8	45	34	14	4	12	18
26	16	23	21	12	5	11	47	36	16	5	10	18
27	27	22	14	22	5	10	44	21	15	10	14	21
28	25	11	18	16	5	15	37	29	12	15	15	21
29	18	8	15	14	11	14	41	38	16	15	8	19
30	18		12	7	4	12	45	27	16	15	10	18
31	14		11		5		36	26		12		19

For example: Precipitation has fallen on 18 percent of the Christmas days during the 73-year period from 1896 through 1968.

# Precipitation:

GREATEST NUMBER OF DAYS WITH TRACE OR MORE AND 0.01 INCH OR MORE BY MONTHS  
AND YEAR OF OCCURRENCE; AND AVERAGE NUMBER OF DAYS WITH 0.01 INCH OR MORE  
BY MONTHS 1896-1968

Month	Trace or More	Year	0.01 or More	Year	Average 0.01 or More
January	15	1916	11	1916	4
February	17	1905	14	1905	4
March	16	1905	12	1905	3
April	18	1926	13	1926	2
May	8 8	1935 1941	3	1917 1930 1935 1941 1947 1957	1
June	8 8	1925 1931	4 4	1899 1932	1
July	17	1919	13	1896	4
August	18	1963	11 11	1913 1929	5
September	16	1897	9	1939	3
October	12	1907	9	1907	2
November	13	1913	11	1905	2
December	14	1965	11 11	1914 1923 1926 1965	4
Annual	106	1905	74	1905	36

# Precipitation:

GREATEST NUMBER OF DAYS WITH 0.10 INCH OR MORE; 0.50 INCH OR MORE, AND 1.00 INCH OR MORE BY MONTHS AND YEAR OF OCCURRENCE - 1896-1968

Month	0.10 or More	Year	0.50 or More	Year	1.00 or More	Year
January	6	1955	3 3	1897 1955	2	1905
February	9	1905	6	1905	1	1908
March	6 6	1905 1952	5	1941	3	1941
April	6	1952	3	1905	1 1	1926 1941
May	2 2	1917 1930 1941 1957	1 1	1930 1944	0	
June	2	1967	1 1	1955 1965	0	
July	7	1896	4	1955	3	1955
August	7	1963	5	1951	2	1943
September	8	1939	3	1939	2	1903 1939 1946
October	5	1957	2 2	1907 1911 1914 1932	1 1	1911 1914 1932 1957
November	9	1905	3	1931	1 1 1	1902 1905 1918 1919 1923 1931 1941
December	9	1914	5	1959	1 1	1898 1902 1915 1926 1940
Annual	43	1905	18	1905	5	1941 1946

ARIZONA INDIAN PROVERB: *"When the clouds hang on the mountain side after a rain and the sun shines on the top of the mountain, the storm is over".*

Precipitation:

GREATEST NUMBER OF CONSECUTIVE DAYS WITH TRACE OR MORE  
1896-1968

10 days	July 22-31	1921	total	0.38
10 days	December 3-12	1926	total	2.50

GREATEST NUMBER OF CONSECUTIVE DAYS WITH 0.01 INCH OR MORE  
1896-1968

10 days	December 3-12	1926	total	2.50
---------	---------------	------	-------	------

GREATEST NUMBER OF CONSECUTIVE DAYS WITH 0.25 INCH OR MORE  
1896-1968

4 days	February 12-15	1931	total	2.83
4 days	December 12-15	1932	total	1.69

GREATEST NUMBER OF CONSECUTIVE DAYS WITH 0.50 INCH OR MORE  
1896-1968

3 days	February 12-14	1931	total	2.48
3 days	February 5-7	1935	total	2.48
3 days	March 12-14	1941	total	2.67
3 days	August 27-29	1951	total	2.77

GREATEST NUMBER OF CONSECUTIVE DAYS WITH 1.00 INCH OR MORE  
1896-1968

2 days	July 1-2	1911	total	5.49
2 days	January 9-10	1905	total	2.69
2 days	July 25-26	1936	total	2.35
2 days	July 17-18	1946	total	2.31
2 days	Sept. 17-18	1946	total	2.65
2 days	July 24-25	1955	total	2.05

GREATEST NUMBER OF CONSECUTIVE DAYS WITHOUT TRACE OR MORE  
1896-1968

88 days	October 17	1917-January 12	1918
88 days	April 10	-July 6	1945

GREATEST NUMBER OF CONSECUTIVE DAYS WITHOUT 0.01 INCH OR MORE  
1896-1968

143 days	March 2	-July 22	1960
119 days	March 24	-July 20	1904
118 days	February 4	-June 1	1899
114 days	March 11	-July 2	1968
105 days	March 24	-July 6	1945

Precipitation:

MAXIMUM AMOUNTS FOR 5, 10, 15, AND 30 MINUTES; 1, 2, AND 24 HOURS BY  
MONTHS AND DAY AND YEAR OF OCCURRENCE - 1896-1968

Month	5 Minutes	10 Minutes	15 Minutes	30 Minutes	1 Hour	2 Hours	24 Hours
January	0.35 3/1926	0.44 3/1926	0.56 3/1926	0.67 3/1926	0.75 3/1926	0.76 3/1926	1.76 9-10/1905
February	0.30 6/1935	0.34 6/1935	0.37 6/1935	0.39 6/1935	0.50 12/1936	0.67 6/1935	1.69 5-6/1935
March	0.26 4/1941	0.41 4/1941	0.43 4/1941	0.46 12/1941	0.61 12/1941	0.77 4/1941	1.31 13-14/1941
April	0.32 19/1951	0.61 19/1951	0.75 19/1951	0.76 19/1951	0.76 19/1951	0.92 8/1926	1.66 5-6/1926
May	0.14 21/1920	0.21 21/1920	0.24 21/1920	0.30 4/1930	0.33 4/1930	0.59 10/1944	1.12 4-5/1930
June	0.30 12/1955	0.33 12/1955	0.33 12/1955	0.40 12/1955	0.55 12/1955	0.82 12/1955	0.94 12-13/1955
July	0.43 26/1936	0.70 26/1952	0.91 26/1952	1.15 17/1908	1.30 26/1917	1.47 2/1911	4.98 1-2/1911
August	0.35 24/1952	0.57 24/1952 2/1946	0.80 24/1952	1.12 18/1966	1.72 18/1966	1.81 6/1918	2.72 27-28/1951
September	0.40 14/1964	0.60 14/1964	0.86 14/1964	1.25 14/1964	1.41 4/1939	2.20 4/1939	3.06 3-4/1939
October	0.39 18/1948	0.59 18/1948	0.62 18/1948	0.86 30/1928	0.93 30-31/1928	1.03 30-31/1928	1.47 29-30/1959
November	0.36 10/1931	0.38 10/1931 23/1919	0.40 23/1919	0.54 14/1918	0.67 14/1918	0.75 27/1919	2.40 9-10/1923
December	0.12 10/1965 11/1941	0.22 19/1967	0.27 19/1967	0.38 19/1967	0.50 19/1967	0.68 19/1967	1.92 30-31/1915
Annual	0.43 July 26/1936	0.70 July 26/1952	0.91 July 26/1952	1.25 Sept. 14/1964	1.72 Aug. 18/1966	2.20 Sept. 4/1939	4.98 July 1-2/1911

# Precipitation:

## LIKELIHOOD OF 0.01 INCH OR MORE ON CONSECUTIVE DAYS IN PERCENT BY MONTHS

Month	Any One Day	Next Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day
January	12.5	5.0	1.9	0.9	0.5	0.3	0.2	*
February	14.1	5.7	2.0	0.7	0.2	*		
March	11.2	4.4	1.5	0.6	0.3	*		
April	7.3	2.7	0.7	0.2	*			
May	3.0	0.6	*					
June	2.5	0.7	*					
July	15.2	4.8	1.6	0.7	0.3	0.1		
August	17.5	4.9	1.3	0.3				
September	10.0	3.3	0.9	0.2	*			
October	6.9	2.4	0.7	0.1				
November	8.0	2.9	0.7	*				
December	11.3	4.0	1.2	0.3				

\*Less than 1/10 of 1%.

For example: In January there is a 12.5 percent likelihood of 0.01 inch or more of precipitation on any day. For a 2-day period, there is only a 5.0 percent chance (column--next day); a 3-day period, a 1.9 percent chance.

## DATES AND AMOUNTS OF ALL SNOWFALLS 1896-1968

1.0 inch January 20 1933  
 1.0 inch January 21 1937 (1 to 4 inches fell in parts of the city and in shaded areas until the 23rd and 24th)  
 0.6 inch February 2 1939  
 0.2 inch March 12 1917  
 0.1 inch Nov. 28 1919  
 TRACE: December 9 1898      December 25 1916      April 1 1949  
           December 10 1898      February 18 1918      January 12 1951  
           January 20 1904      May 9 1930      January 13 1962  
           December 6 1909      February 1 1939      January 17 1962  
           December 25 1911      February 8 1939      December 13 1967  
           May 1 1915      February 9 1939      December 20 1968

## VI. THUNDERSTORMS, HAIL AND TORNADOES

### Arizona Monsoon

The so-called "Arizona Monsoon" is a hot and humid period that occurs during the summer months. It is not always a sustained period because there are often periods of hot, dry weather interspersed with hot, humid days.

The monsoon's onset is often dramatic in the Phoenix area and occurs when the very hot, dry continental tropical air prevalent in June is replaced by a surge of maritime tropical air. The source of the moist air is primarily the Gulf of Mexico, but occasionally moisture reaches the area from the west coast of Mexico.

The monsoon moisture, combined with strong solar insolation, creates uncomfortable heat and humidity and also produces an abundance of thunderstorms. Thunderstorms occur at Phoenix on the average of 7 days in July and 8 days in August.

For statistical purposes a monsoon day has been defined as a day with dew points of 55°F. or higher. This figure represents a relatively high moisture value and is easily measured.

#### 1896 - 1968

Average date of monsoon onset ..... July 8  
In two out of three years ..... July 1 through  
July 16

Earliest date of onset ..... June 16 1925  
Latest date of onset ..... July 24 1943

Average date of first break in monsoon ..... August 16

Average total number of monsoon days ..... 57

#### 1948 - 1968

Largest number of monsoon days ..... 67 in 1959  
Smallest number of monsoon days ..... 27 in 1962

Average longest consecutive number of  
monsoon days ..... 33

Longest consecutive number of monsoon days ..... 57 July 9 -  
Sept. 3 1959

ARIZONA INDIAN PROVERB: *"Rain will occur about a week after  
locusts begin to sing at night".*

AVERAGE NUMBER OF DAYS WITH THUNDERSTORMS AND HAIL BY MONTHS -  
1896-1968

Month	Thunderstorms	Hail
January	*	*
February	1	*
March	1	*
April	1	*
May	1	*
June	1	*
July	7	*
August	8	*
September	3	*
October	1	*
November	1	*
December	*	*
Annual	26	1

(\* less than 1)

GREATEST NUMBER OF DAYS WITH THUNDERSTORMS AND HAIL BY MONTHS  
AND YEAR OF OCCURRENCE 1896-1968

Month	Thunderstorms	Year	Hail	Year
January	2	1945	2	1945
February	5	1931	2	1942
March	7	1905	2	1952 1941 1912
April	12	1926	1	1951 1944 1942 1941 1940 1933 1926 1908
May	5	1957 1934 1926	1	1930 1926 1920 1907
June	5	1918	1	1965 1956
July	16	1917 1908	1	1940 1915
August	20	1909	1	1942 1928 1905
September	13	1897	1	1964 1950 1935 1903
October	4	1928	1	1916 1914
November	4	1959	1	1905 1898
December	4	1965 1940	1	1964 1949 1928 1923 1921
Annual	48	1905	5	1926

PROBABILITY OF THUNDERSTORM OCCURRENCE IN PERCENT BY DAYS

Day	June	July	August	September	October
1		8	32	19	6
5		12	31	16	5
10		18	30	13	4
15	4	24	27	11	
20	4	28	25	9	
25	6	30	22	7	

ARIZONA INDIAN PROVERB: *"The clouds must look like many sheep before the rains will come".*

DESCRIPTION OF KNOWN TORNADOES AND FUNNEL CLOUDS IN THE  
GREATER PHOENIX AREA 1955-1968

JUNE 13, 1955 Severe thunderstorms were widespread over much of the eastern two-thirds of the state throughout the day. About 10:00 a.m. several funnel clouds were observed underneath one main cloud north of the White Tank Mountains. Later the same day (about 4:30 p.m.) possible tornado damage occurred east of Queen Creek Village; damage was estimated at \$8000.

JULY 25, 1956 At about 4:00 p.m. a small tornado caused damage along a path about 200 feet long and 15 feet wide near 4421 North 14th Street. About \$250 damage was caused.

OCTOBER 23, 1956 At about 3:30 p.m. near Lake Pleasant Reservoir, a tornado was observed, but the funnel did not reach the ground. High winds and terrific roaring in the clouds accompanied the tornado.

MARCH 7, 1958 At 10:17 a.m. a funnel cloud was sighted in Litchfield Park but did not touch the ground.

MARCH 11, 1958 About 5 miles south of Phoenix, a possible tornado damaged a chick hatchery to the extent of about \$2000.

SEPTEMBER 24, 1958 Between 10:05 and 10:35 a.m., a well-developed tornado skipped for four miles across open desert 8 miles northeast of Mesa.

JULY 19, 1961 A funnel cloud was observed over Tempe between 7:18 and 7:25 p.m. Funnel did not touch the ground.

JULY 22, 1961 A possible tornado destroyed two hangars and damaged a number of aircraft at Deer Valley Airport.

SEPTEMBER 8, 1961 Possible tornadoes at 1:30 p.m. caused damage to roofs extending from 7th Avenue and Southern across 7th Street and Broadway, to Camelback High School, to Scottsdale and to Paradise Valley.

MARCH 11, 1965 A small funnel was observed at 10:37 a.m. about 20 miles east-northeast of the Sky Harbor Airport. It did not touch the ground.

DECEMBER 19, 1967 At 5:30 p.m. a small tornado moved through a Mesa subdivision from the southwest and unroofed several homes.

JULY 4, 1968

At 5:30 p.m. a small tornado destroyed a house, injuring two occupants about 5 miles east of Mesa. Two other homes and a barn suffered considerable damage. Storm was moving toward the southwest when first sighted, then turned toward northwest and followed a short skipping path before dissipating about 5 minutes after being sighted. \$25,000 damage.

JULY 20, 1968

At 8:30 p.m. a small tornado damaged several homes in the eastern part of Phoenix near 52nd Street and Van Buren. Funnel moved toward the southwest, accompanied by a loud roaring noise but apparently remained on the ground for only a few blocks. Damages estimated at \$10,000.

OCTOBER 3, 1968

At 7:00 p.m. a storm struck the residential section of Glendale causing severe damage to two apartment buildings. Several parked automobiles were heavily damaged by falling concrete blocks. Flying glass injured several persons, hospitalized one. Tornado then followed a skipping path toward the west, causing additional damage to buildings and parked trailer-houses along the way.

# VII. SUNSHINE, CLOUDINESS AND FOG

## AVERAGE AND HIGHEST AND LOWEST PERCENTAGE OF POSSIBLE SUNSHINE BY MONTHS AND YEAR OF OCCURRENCE 1896-1968

Month	Average	Highest	Year	Lowest	Year
January	77	100	1924	54	1935
February	80	99	1924	47	1905
March	83	98	1959	61	1905
April	88	98	1954 1961	68	1926
May	93	99	1924 1927 1942	82	1953
June	94	100	1916 1917 1928 1939	78	1931
July	84	97	1961	67	1930
August	85	97	1956 1960	64	1935
September	89	99	1955 1956 1968	76	1940
October	88	98	1915	72	1925
November	84	98	1948 1956	62	1965
December	77	98	1958	47	1914
Annual	86	94	1960	75	1935

## AVERAGE ANNUAL PERCENTAGE OF POSSIBLE SUNSHINE AT PHOENIX AS COMPARED TO OTHER MAJOR U.S. CITIES

Phoenix	86	Houston	67	Pittsburgh	41
Boston	59	Los Angeles	74	Saint Louis	58
Chicago	58	Miami	66	Salt Lake City	69
Cleveland	52	Minneapolis	58	San Francisco	66
Denver	70	New Orleans	55	Seattle	45
Detroit	54	New York	60	Washington	58

AVERAGE NUMBER OF CLEAR, PARTLY CLOUDY, CLOUDY, AND  
HEAVY FOG DAYS BY MONTHS 1938-1968

Month	Clear	Partly Cloudy	Cloudy	Heavy Fog
January	14	7	10	1
February	13	6	9	*
March	14	8	9	*
April	17	7	6	0
May	21	6	4	0
June	23	5	2	0
July	16	11	4	0
August	17	10	4	0
September	22	5	3	0
October	21	6	4	0
November	18	6	6	*
December	15	7	9	1
Annual	211	84	70	2

\*Less than 1

ARIZONA INDIAN PROVERB: *"If the sun appears dead, not bright and clear, in the early spring, expect poor crops and very little rain".*

# VIII. WIND

AVERAGE SPEED, PREVAILING DIRECTION, AND PEAK GUST BY MONTHS  
AND DAY AND YEAR OF OCCURRENCE 1938-1968

Month	Average Speed	Prevailing Direction	Peak Gust	Direction	Day/Year
January	4.8	East	49	WNW	7/1965
February	5.3	East	49	SSE	21/1959
March	6.0	East	50	WNW	6/1956
April	6.3	East	45 45	NW WSW	1/1957 30/1954
May	6.4	East	59	SSE	20/1954
June	6.4	East	47	SW	23/1965
July	6.6	West	71	N	26/1959
August	6.1	East	60	SSW	25/1953
September	5.8	East	75	SW	18/1950
October	5.2	East	48	SSW	1/1956
November	4.8	East	45	WSW SSW	7/1963 26/1960
December	4.7	East	68	W	4/1953
Annual	5.7	East	75	SW	September 18/1950

MEAN FREQUENCY OF OCCURRENCE OF PEAK WIND GUSTS BY MONTHS  
1957-1966

MPH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
20 - 24	4	4	6	8	10	11	10	7	6	5	5	5
25 - 29	2	2	3	4	5	4	4	3	3	2	1	2
30 - 34	1	1	2	2	2	2	3	3	1	1	1	<1
35 - 39	1	1	1	1	1	1	1	2	1	<1	<1	<1
40 - 44	<1	<1	<1	1	<1	1	1	1	<1	<1	<1	0
45 - 49	<1	<1	0	<1	<1	<1	1	1	1	<1	<1	0
>50	0	0	0	0	<1	0	1	1	<1	<1	<1	0

<Less than

>More than

For example: In January, on the average, there are 4 days with peak wind speeds from 20 to 24 mph, 2 days with peak wind speeds from 25 to 29 mph, 1 day with peak wind speed from 30 to 34 mph, 1 day with peak wind speed from 35 to 39 mph, etc.

# IX. PRESSURE

## AVERAGE AND HIGHEST AND LOWEST STATION PRESSURE BY MONTHS AND DAY AND YEAR OF OCCURRENCE Station Elevation 1107 Feet 1896-1968

Month	Average	Highest	Day	Year	Lowest	Day	Year
January	28.88	29.42	24	1938	28.20	4	1913
February	28.84	29.34	1	1916	28.24	23	1948
March	28.78	29.26	12	1920	28.25	28	1949
April	28.71	29.23	4	1945	28.27	28	1898
May	28.65	29.00	3 3	1953 1955	28.19	18	1902
June	28.62	28.95	2	1919	28.31	20	1947
July	28.66	28.94	28	1952	28.33	14	1900
August	28.68	28.96	28	1896	28.37	22	1903
September	28.67	28.95	21	1950	28.24	24	1915
October	28.74	29.15	28 24	1921 1945	28.22	11	1928
November	28.84	29.29	3	1936	28.31	28	1933
December	28.88	29.44	24	1898	28.24	10	1949
Annual	28.75	29.44	24 December	1898	28.19	18 May	1902

HIGHEST AND LOWEST SEA-LEVEL PRESSURE BY MONTHS AND DAY AND YEAR  
OF OCCURRENCE 1896-1968

Month	Highest	Day	Year	Lowest	Day	Year
January	30.62	24	1938	29.35	4	1913
February	30.55	1	1916	29.36	23	1948
March	30.45	12	1920	29.38	28	1949
April	30.42	4	1945	29.37	28	1898
May	30.16	3 3	1953 1955	29.32	18	1902
June	30.11	2	1919	29.40	20	1947
July	30.07	28	1952	29.43	14	1900
August	30.09	28	1896	29.47	22	1903
September	30.12	21	1950	29.34	24	1915
October	30.32	28 24	1921 1945	29.34	11	1928
November	30.48	3	1936	29.45	28	1933
December	30.62	24	1898	29.38	10	1949
Annual	30.62	24 December 24 January	1898 1938	29.32	18 May	1902

NORMAL 6-HOURLY PRESSURE CHANGES IN INCHES ENDING AT:

Month	0500M	1100M	1700M	2300M
January	-0.01	+0.06	-0.10	+0.04
February	0	+0.06	-0.10	+0.05
March	+0.01	+0.05	-0.11	+0.04
April	+0.02	+0.05	-0.12	+0.05
May	+0.03	+0.04	-0.12	+0.05
June	+0.03	+0.04	-0.12	+0.03
July	+0.03	+0.04	-0.14	+0.07
August	+0.03	+0.04	-0.13	+0.07
September	+0.02	+0.05	-0.12	+0.05
October	+0.02	+0.04	-0.11	+0.05
November	0	+0.05	-0.10	+0.05
December	0	+0.05	-0.10	+0.05

Source: NORMAL PRESSURE AND TENDENCIES FOR THE UNITED STATES,  
1931-1940, Weather Bureau Technical Paper No. 1, 1943.

# X. FLYING WEATHER

## PERCENTAGE FREQUENCIES OF CEILING-VISIBILITY

Visibility (miles)	Ceiling (feet)									Total
	0	100- 200	300- 400	500- 900	1000- 1900	2000- 2900	3000- 4900	5000- 9500	Over 9500	
0 to 1/8	+	+	+					+	+	+
3/16 to 3/8	+			+				+	+	+
1/2 to 3/4		+		+	+	+		+	+	+
1 to 2-1/2	+		+	+	+	+	+	+	.1	.1
3 to 6			+	+	.1	+	.1	.1	.3	.7
7 to 15				+	.1	.1	.7	2.5	44.4	47.9
20 to 30				+	+	.1	.4	1.1	22.1	23.7
35 or more					+	+	.2	.7	26.7	27.5
Total	+	+	+	.1	.2	.3	1.4	4.5	93.6	100

+ indicates more than 0 but less than .05

Source: SUMMARY OF HOURLY OBSERVATIONS--PHOENIX, ARIZONA, 1951-1960,  
Climatology of the United States No. 82-2.

# XI. HOLIDAY WEATHER INFORMATION

Holiday	Average Maximum Temp.	Average Minimum Temp.	Highest Maximum Temp.	Year	Lowest Minimum Temp.	Year	Frequency of trace or more of precipitation in percent.
New Year's Day January 1	65	36	80	1918	24	1919	14
Washington's Birthday February 22	70	40	82	1949	26	1955	15
Easter Season Mar. 15-Apr. 14	79	47	103	1925	31	1917	16*
Memorial Day May 30	97	60	114	1910	51	1918	4
Independence Day July 4	106	73	113	1965 1907	63	1912	15
Labor Day Weekend Aug. 30-Sep. 7	101	71	116	1950	60	1921	24*
Halloween October 31	80	47	91	1965 1962	36	1900	12
Arizona State Fair Nov. 1-15	77	45	96	1924	28	1916	12*
Thanksgiving Day Nov. 22-28	71	40	89	1950	27	1931	15*
Christmas Day December 25	65	36	76	1955 1933	26	1926	18

\*These percentages relate to the probability of precipitation on any one day of the given period.

## XII. WEATHER EXTREMES

### WEATHER EXTREMES FOR PHOENIX AS COMPARED TO THOSE FOR ARIZONA AND UNITED STATES

#### HIGHEST TEMPERATURE

Phoenix	118	July 16 1925	June 24 1929	July 11 1958
Arizona	127	Parker July 7 1905	Fort Mohave	June 12 1896
United States	134	Death Valley California July 10 1913		

#### LOWEST TEMPERATURE

Phoenix	16	January 7 1913
Arizona	-37	Maverick January 13 1963 Fort Valley Jan 12 1963
United States	-76	Tanana Alaska January 1886
	-70	Rogers Pass Montana January 20 1954

#### GREATEST PRECIPITATION IN ONE HOUR

Phoenix	1.72	August 18 1966
Arizona	2.57	Walnut Gulch, near Tombstone, October 4 1954
United States	12.00	Holt Missouri June 22 1947
	12.00	Kilauea Sugar Plantation Kauai Hawaii January 24-25 1956

#### GREATEST PRECIPITATION IN TWENTY-FOUR HOURS

Phoenix	4.98	July 1-2 1911
Arizona	6.00	Crown King December 19 1967
	5.95	Pinal Ranch, near Superior, January 9-10 1905
United States	38.20	Thrall Texas September 9-10 1921
	38.00	Kilauea Sugar Plantation Kauai Hawaii January 24-25 1956

#### GREATEST PRECIPITATION IN ONE CALENDAR MONTH

Phoenix	6.47	July 1911
Arizona	16.95	Crown King August 1951
United States	107.00	Puu Kukui Maui Hawaii March 1942
	71.54	Helen Mine California January 1909

#### GREATEST PRECIPITATION IN ONE CALENDAR YEAR

Phoenix	19.73	1905
Arizona	58.45	Pinal Ranch, near Superior, 1905
United States	578.00	Puu Kukui Maui Hawaii 1950
	269.30	Little Port Walter Alaska 1943
	184.56	Wynoochee Oxbow Washington 1931

#### LEAST PRECIPITATION IN ONE CALENDAR YEAR

Phoenix	2.82	1956
Arizona	0.30	Yuma 1956
United States	0.00	Death Valley California 1929
	0.00	Bagdad California 1913

#### GREATEST SNOWFALL IN TWENTY-FOUR HOURS

Phoenix	1.0	January 20 1933	January 21 1937
Arizona	31.0	Flagstaff	December 30 1915
United States	75.8	Silver Lake	Colorado April 14-15 1921
	62.0	Thompson Pass	Alaska December 29 1955

#### GREATEST SNOWFALL IN ONE STORM

Phoenix	1.0	January 20 1933	January 21 1937
Arizona	54.0	Flagstaff	December 29-31 1915
United States	189.0	Mt. Shasta Ski Bowl	California February 13-19 1959
	175.4	Thompson Pass	Alaska December 26-31 1955

#### GREATEST SNOWFALL IN ONE CALENDAR MONTH

Phoenix	1.0	January 1933	January 1937
Arizona	104.8	Flagstaff	January 1949
United States	390.0	Tamarack	California January 1911
	363.0	Paradise Ranger Station	Washington January 1925

#### GREATEST SNOWFALL IN ONE SEASON

Phoenix	1.0	1932-1933	1936-1937
Arizona	212.2	Bright Angel	Grand Canyon 1940-1941
United States	1000.3	Paradise Ranger Station	Washington 1955-1956
	974.4	Thompson Pass	Alaska 1952-1953

#### GREATEST DEPTH OF SNOW ON THE GROUND

Phoenix	1	January 20 1933	January 21 1937
Arizona	91	Hawley Lake	December 21 1967
United States	451	Tamarack	California March 11 1911

#### HIGHEST SEA-LEVEL PRESSURE

Phoenix	30.62	December 24 1898	January 24 1938
Arizona	31.21	Grand Canyon	December 22 1967
United States	31.40	Helena	Montana January 9 1962
	31.36	Bethel	Alaska December 21 1937

#### LOWEST SEA-LEVEL PRESSURE

Phoenix	29.32	May 18 1902	
Arizona	29.15	Flagstaff February 7 1937	
United States	26.35	Matecumbe Key	Florida September 2 1935
	27.61	Miami	Florida September 18 1926
	27.68	Dutch Harbor	Alaska November 16 1912

#### HIGHEST WIND VELOCITY

Phoenix	75	September 18 1950	
Arizona	75	Phoenix September 18 1950	
United States	231	Mt. Washington	New Hampshire April 12 1934